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IBM must capitulate on practices – EEC

by Kevan Pearson

THE EEC will not drop its anti-trust case against IBM despite pressure from the US government unless IBM capitulates on all the pending charges, said a senior EEC official.

John Ferry, director of the EEC's anti-trust division, said the case would continue until the Commission had reached a decision about whether IBM was guilty, unless IBM agreed in writing to abandon the practices which led to the case being brought.

In the US, a 13-year anti-trust case was dropped in January without such an agreement, and it has emerged that US interest in the EEC case goes back much further than the official US delegation to a five-day hearing in February.

IBM sent a heavyweight delegation to the hearing including chairman Frank Cary, Cyrus Vance, a director of IBM and former Secretary of State under President Carter, and Sherman Unger, general counsel of the Commerce Dept.

The charges against IBM are that it refuses to release technical interface information about new products until it makes first deliveries, that it bundles memory component into its processors and that it fails to make the latest software developments available to users of plug-compatible equipment.

IBM has already taken action on the software charge. Twelve months ago it agreed to make Sipos, Systems Installation Productivity Options, available to PCM users. Previously it was available only to users of IBM hardware.

The EEC was not involved in the decision and the charge still stands. Ferry stressed that this was a unilateral decision by IBM and did not meet the Commission's requirements for dropping the case.

He said it was a policy decision on IBM's part and could be reversed at a later date without incurring any penalty.

The EEC would want a written agreement detailing penalties to be applied should IBM renege on the deal.

The EEC case will continue with a second hearing later this year, when the Commission will detail the remedies against IBM and give the company an opportunity to discuss the remedies.

If IBM could show that the remedies were unfair then the EEC would consider new remedies, said Ferry, but the onus of proof would be on IBM.

In the US moves are continuing to re-open the case. Judge David Edelstein has called a hearing for April 19 to decide whether the Justice Department was right to drop the case without going to court or obtaining any undertakings from IBM.

CARY . . . Arguing the company's case at the EEC.

ICL rise good one say union

by David Craver

A SIGN that ICL's finance the upswing comes wit unions getting their first ble offer from the compa most two years.

It is only a crumb – an in London allowance – b being interpreted as a go by union leaders as they for the annual bargaining with ICL starting in June.

National Officer Tim Re the Association of Scientific nical and Managerial Sta largest ICL staff union, was elated after returning fro tiations with ICL manageme

He said the agreement t that ICL was worried about turnover in staff. "The accepted that something done about remuneration staff."

London allowance affects workers, or about 11% of total workforce. The ann Inner London (1,810 est will almost double to £1,4 £544 per annum, while the for Outer London will incre £446 from £230.

After a pay freeze last ye redundancy notices for 8,5 employees, the unions try the rise in London allowance be a harbinger of things to

ASTMS is recommendi its members accept the L London allowance, while effect from April 1.

An ICL spokesman co drawn on whether the trade could expect a positive pay

Mercury fighting fund started by PO union

by Donald Kennett

A CAMPAIGN to prevent the start-up of Mercury, the nationwide network project set up in competition with British Telecom, has been launched by Liverpool Internal branch of the Post Office Engineering Union.

Branch chairman Mick McCullough said his branch had put £1,000 into a fighting fund to support the campaign and other members of the Council of Post Office Unions had contributed up to £250 each.

He also claims support from the National Union of Railwaymen, whose telecommunications engineers are expected to lay Mercury's optical fibre cables alongside British Rail tracks.

The British Rail unions have a potential conflict of interests in that their members stand to benefit from the installation of Mercury, although as members of a fellow nationalised industry they may sympathise with others in the position of losing revenues through competition with private industry.

Mercury will be a topic of major concern at the Post Office Engineering Union's national conference in June. Research officer Roger Darlington says the union response will depend on the issues of national and international interconnections that have yet to be fully resolved, because of the extent to which Mercury will be earning its living from BT's facilities rather than its own.

● Mercury Communications Ltd has now been established as a company and has moved into its own office in London's Hatton Garden. Chief executive Derek Evans and technical director Peter Cott have both come from Cable & Wireless, the company leading the consortium, with the six other directors being drawn equally from all three members of the consortium – C&W, British Petroleum and Barclays Merchant Bank.

NCR challenges ICL with rival to high-speed Perq workstation

by Robert Parry

A HIGH-SPEED workstation to rival ICL's Perq is to be announced by NCR next week. The desk-top standalone machine, the 9010, is based on a microcoded 16-bit processor called ALP-2. It was developed by Californian hardware and software research company Volition Systems for NCR's Modular Lodging System for hotels.

The processor directly executes USCD Pascal p-code, compiling large programs at between 4,000 and 6,000 lines a minute on floppy discs, says Joel McCormack, chairman of Volition Systems. He compares this with 5,000 lines a minute for a single user on a Vax-11/780 with hard discs, which at $100,000, weighs in at around ten times the target price for the NCR machine.

Benchmarks written in Pascal show the ALP-2/UCSD p-code combination executes almost as fast as Berkeley Unix Pascal on the Vax machine and runs "neck and neck" with the Perq, McCormack adds. He sees this speed making the NCR desk-top attractive for program development and for running statistical and large complex programs.

NCR shares this view of a market for software development workstations. "It's kind of an experiment by NCR," says Gary Huttenmaier, NCR's senior design engineer for the machine, "but we feel there will be a big demand for the product."

Huttenmaier says that the 9010 hardware will cost about $8,000 or $9,000 with the software adding another $2,000. He feels that developments of the machine by NCR will go two ways: to more powerful systems with graphics capabilities and more speed, and to cheaper systems with roughly the same power. European production of the machine is likely to be at NCR's plant in Augsburg, West Germany.

The Perq workstation, a 68000 machine from Three Rivers in the US, is sold and manufactured by ICL. The price was recently cut to £19,000 and is due to be reduced further.

The ALP-2 – for Advanced Language Processor – grew out of a particular hotel system application. "The development started about three years ago with an 8085 system using a p-code interpreter," says Huttenmaier. "This was too slow, so a hardware processor using 2900 bit slices was developed."

This processor, the ALP-1, is currently used in the hotel system, one of which is installed in the Heathrow Hotel. The ALP-2 is a refinement giving a four-fold speed increase.

According to Volition Systems, which developed it under contract to NCR, the major hardware design challenge was the constraint that the board had to fit into the existing box for the hotel system.

Changes to the hardware that Volition Systems would like to see include moving the technology on to another bus system, such as Multibus, and adding graphics capabilities. McCormack also talks of compressing parts of the already "sparse but powerful" processor on to a single chip to reduce the machine's component count.

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DEC hits hard at low end

by Boris Sedacca

COMPETITION between the "Supermini" manufacturers hotted up last week with the announcement by Digital Equipment of its long awaited bottom-end 32-bit minicomputer, the VAX 11/730.

DEC has priced the machine extremely competitively to encourage its existing 16-bit customer base to stay with the company when it moves over to 32-bit machines. That will help it in its drive to remain the world's largest minicomputer manufacturer.

The new machine will hit not only Data General, its traditional rival first in the 16-bit minicomputer marketplace and now in the 32-bit market, but also Perkin-Elmer, which entered the 32-bit market before DEC when it bought Interdata and which has been attacking the top end of DEC's 16-bit customer base ever since.

Industry observers predict the 730 will have a serious impact on sales of the company's PSP-11/44 and 11/70 machines too.

The company has also announced a VAX compiler for Bell Laboratories' C language, used to write the popular Unix operating system. The VAX processors will thus run Unix, already heavily supported in the 16-bit PDP-11 series.

At £28,000 for a minimum configuration VAX 11/730 with one megabyte of main memory, the machine is placed to fill the gap between the two 16-bit PDP series models. Ian Woolfson, a consultant with DEC based systems house Systime, predicts that DEC will have to drop the price of the 11/44 soon, and that the machine could be discontinued within the next 18 months.

"The VAX 11/730 is a good machine. It is what everyone has been waiting for. There will soon be a glut of cheap PDP-11/44s and 11/70s on the market," he says.

A spokeswoman for DEC said: "The VAX 11/730 is not intended as a direct replacement for the PDP-11/70 range. We will continue to manufacture the PDP-11/70 as long as there is a user demand for it."

The new machine overcomes one of the criticisms of the middle range VAX 11/750. This machine, says Woolfson, suffered from having insufficient main memory for the VAX VMS operating system. At two megabytes the machine ran out of power very quickly.

The new machine can have up to five megabytes of main memory and the 11/750 can now have up to eight megabytes, the same as the top of the range 11/780 and 11/782 models.

The improvements in memory have been made possible by DEC's first use of 64Kbyte RAM chips on both the 11/730 and 11/750.

DEC expects to start deliveries of the 11/730, which is being made in the Republic of Ireland, in the second quarter of 1982, with bulk shipments starting towards the end of the year.

CRAY...No longer at the helm.

Fastest computer in the world

by Kevin Cahill

CRAY Research will take at least a temporary lead over its arch-rival Control Data with the launch next week of the world's fastest production line computer.

Cray's new supercomputer is capable of performing between 600 and 1,200 million instructions per second (mips) but its cost will keep it out of the reach of most commercial users.

The machine, originally identified in the company's 1981 annual report as the Riverside project, is not expected to be in delivery before 1984.

Designed by the company's founder Seymour Cray, it will have a CPU cycle time of four nanoseconds, compared with 12.5 nanoseconds of the current Cray 1 machine.

Main memory capacity is expected to be a maximum of 32 Mbytes and configuration of the processor is likely to involve four computers closely linked and each having speeds three times faster than the current Cray machine.

The main memory limit has been increased by changing from 27-bit addressing to 31-bit addressing.

According to American commentators the features so far revealed indicate that the machine will not be fully compatible with the existing Cray-1 series machines.

Packaging of the Cray 2, based on modules of eight printed circuit boards using 16 gate array chips with vertical and horizontal wiring, will mean that the CPU is one tenth the size of the current Cray 1. Cooling is by means of immersion of the modules in an inert fluorocarbon based liquid.

Pricing of the machine has not been made public but American analysts suggest that it will be between $14 and $20 million per unit shipped. This compares with a current price range of $5 to $14 million for the present range of machines.

The company is also expected to introduce another Cray 1 series machine within the next six months, fully compatible with the Cray 1 and with about twice the power.

Cray machines are intended primarily for scientific and other calculations in which huge number ranges and mathematical processing are needed.

Because of this, the number of machine shipments is small and may be no more than 10 this year.

Seymour Cray has always used conventional technology as the hardware base for his machines, relying on the software he produces to obtain the vector processing and very high-speed throughput needed to drive the calculations performed by the machines.

Cray resigned as chairman of the company last year and is currently contractor and virtual outside director.

Japanese giants arrive

by Kevin Cahill

THE long predicted blitzkrieg on the European mainframe market by the Japanese computer giants has finally come.

Siemens, the German electrical and engineering giant, has taken more than 80 of Fujitsu's Facom systems so far this year, and Fujitsu says that it expects to ship another 20 systems to Siemens before the year is out.

Visitors to the Fujitsu plant at Numazu outside Tokyo last November and December saw up to 24 mainframes on the shop floor labelled for Siemens.

This was in sharp contrast to the early part of last year when Siemens was taking fewer than two systems a month. Value of the units already shipped to Germany is about £100 million and marks a sudden rise in activity at the loss-making data processing division of Siemens.

ICL, which is shortly expected to announce the first orders for the Facom 380, said that it was happy on Siemens' behalf as the volume of sales proved the quality of the Fujitsu product. ICL pointed out that as far as the company knew, none of the Siemens machines was as large as the 380.

Hitachi, the other Japanese IBM plug compatible supplier to Europe, has not had quite the same level of success as its agents. National Advanced Systems has so far sold 14 AS 9000s, which is the Hitachi top end M200. Olivetti has installed six M200s and BASF, five.

Forgeries caused job losses

by Paul Liptrott

The forgeries of accountant Leslie Osten cost at least 50 colleagues their jobs at Middlesex-based terminal manufacturer Data Dynamics. They were made redundant at the computer firm where Osten was chief accountant after it was discovered he had forged cheques worth £39,500.

Osten was jailed for 18 months last week when the court heard how he had used the cash to entertain and lavish gifts on two girlfriends in Paris.

A director of Data Dynamics, Chris Stabler, has revealed how Osten's desire for high living pushed the business into receivership. "As a result of his theft the bank called in an overdraft and a receiver was appointed," said Stabler. "A finance company took over the assets and we have kept going but there were between 50 and 60 redundancies. About 100 staff were employed at the time. It was quite a shock.

"The bank lost confidence in the firm in view of the fact that Osten was our chief accountant."

It was Stabler who called in the police last October when he realised that Osten had been forging the cheques. Osten had been writing cheques with a ballpoint pen, using ink that can be erased. After Stabler had signed the cheques Osten substituted his own name for that of a credit card company.

Stabler said, "I found out quite by chance. It surprised me that his method was so crude. He had been sent away on courses to do with computer systems security against fraud. I thought he would have come up with something more sophisticated and difficult to detect."

NEWS BRIEF

Honeywell to invest £1.3m in Scotland

A £1.3 million investment programme announced by US-owned Honeywell is expected to bring 100 new jobs to Lanarkshire in Scotland. The company is to develop a new range of keyboards based on membrane technology at its factories in Newhouse, largely aimed at the European markets.

The facility will be employing 40 people by the end of 1982, with an expected rise to over 100 in late 1983.

Newbury record

NEWBURY Laboratories, the UK VDU manufacturer, has achieved record sales, profits and shipments following a major re-organisation. Profits jumped sixteen-fold from £16,000 to £268,000 on sales which doubled over the same period last year from £1.1 million to £2.2 million. Shipments of Newbury's own VDUs were up 50% to 2,000 units in the quarter.

Apple earnings

SECOND quarter earnings for Apple Computer are expected to show a 50% rise over the same quarter last year, to about $14 million. Revenue was reported to be slightly below the $133.6 million of this year's first quarter.

Sales are said to have flattened out for the Apple II but to be on target for the Apple III.

Amdahl slump

IBM plug-compatible computer manufacturer Amdahl saw its pre-tax profits for the first quarter of 1982 slump 52% to $4.2 million compared with the same period last year on sales up almost 15% at $109.7 million. Start-up expenses on new products and the strong dollar were blamed for the result.

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Atlantic leads way in cutting price of 3033

by Kevan Pearson

ONE of the largest independent lessors of IBM equipment has become the first company to cut the price of new 3033s following the launch of the 3083 range two weeks ago.

Atlantic Computer Leasing has cut the price of its standard Flexlease packages by between 10% and 25%, and can offer immediate delivery of 3033 models U and N. The deal applies to all models of the 3033 except model S, and is limited to machines installed before the end of 1982.

IBM is still making new 3033s at its Montpellier plant, but the machine is widely regarded as having a limited useful life since the release of the 3083. Many industry observers believe it has only two years before prices plummet the way they have on its smaller cousin, the 3032.

Around three years ago the 3032 cost about £1.7 million. Now, on the secondhand markets, it fetches between £100,000 and £150,000.

The price of the 3033 is not expected to fall this badly, but there will be general downward pressure from the end of 1982 when the first 3083s become available. By the end of 1983 or early 1984, when the entry level 3083E (4.5 mips) is on the market, the downward price pressure will increase.

"I would doubt very much whether many companies would buy a new 3033 in 1982," said Peter Streak, managing director of Comenco. "At around £1 million it is very expensive for a machine with a life of around two years. Second-hand at £600,000 it is very attractive. We would not consider a residual value on a 3033 beyond two years."

John Fuller, director of PCML, another independent lessor, confirmed the general view, but feels that there will be some new 3033 installations in coming months because "there will not be enough second user 3033s around."

He reports a fairly hard market for used 3033s at the moment, because the price performance ratio for the 3083 is "too high, and the 3083E is two years away. The launch of the 3083 reinforced the second user market. It is very much a buyer's market," he says.

Fuller adds that there is the possibility that IBM will also cut the price of new 3033s later this year.

BIDDLE . . . "An exception to every rule in taxation."

Apple package does year-end tax

by Maggie McLening

A PERSONAL Income Tax calculation package has been launched by Personal Computers for the Apple II microcomputer.

Intended as a productivity aid for the accountant, Taxpayer*1 automatically performs standard calculations for couples or individuals, and produces a report which can be submitted directly to the Inland Revenue. If the client is a married man, it will also indicate whether it is more beneficial for his wife to elect for separate taxation of her earnings.

Developed by Taxation Software, which specialises in accounting and taxation systems, the package is claimed to be written "by professionals for professionals". This is true in that a layman would not be able to use the product without an accountant because of the technical references in it.

"The trouble with taxation is that there is an exception to every rule," said Tony Biddle, the accountant and managing director of Taxation Software.

Retail price of the package is £500, with annual renewals set at £400, to include the supplying of updated discs following each Finance Act.

IBM backs CICS re-design

by Maggie McLening

GOOD news for users of the CICS TP monitor is that IBM is sponsoring an Oxford University project to re-design the system from scratch. The bad news is that it may be 10 years before any benefits reach the end user.

The project is part of a study of improved program development methods being undertaken by the Programming Research Group (PRG) of the Computing Laboratory of Oxford University. IBM in the US is paying the salaries of two research fellows from Oxford, two consultants from Manchester and Edinburgh Universities and one co-ordinator.

Leader of the team is Dr Ib Holm Sorensen of Oxford University, who explained that the objective of the exercise is to re-specify the system using pure mathematics instead of a system specification language, and that this part of the possible re-design alone is expected to take three years. Programming of the system might take a further two to seven years, he estimates.

He emphasised that IBM will be under no obligation to use the results of the project, but that CICS was the ideal commercial system on which to test the new theories.

Micro-to-mainframe link

IBM users might be interested in a microcomputer program from Encotel Systems, the Croydon-based microcomputer distributor, which allows any micro running CP/M to communicate with an IBM mainframe under the Hasp protocols.

Bisynch-80/Hasp allows any micro using CP/M, and which has 64 Kbytes of RAM and an RS232C synchronous port, to act as an intelligent remote terminal for IBM mainframes. CP/M is supported on almost every 8-bit available.

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PLESSEY PERIPHERAL SYSTEMS

French near to deal on CII-HB independence

by Jack Gee

THE French government and the Honeywell group appear close to an agreement to reduce the American firm's 47% stake in CII-Honeywell Bull to 19.9%.

Officials in Paris said that although the French computer company's independence from its American parent would be enhanced, it would lose some of its financial and trading advantages under the new arrangement.

Honeywell has exploited a clause in the 1975 partnership which requires France to buy back the American company's 47% stake within 60 days if a French shareholder is nationalised.

At the time of the original agreement the French partner was Compagnie Generale d'Electricite whose stake has since been acquired by Saint Gobain Pont-à-Mousson. Saint Gobain, like CGE, has been taken over by the State.

Although the French government gave Honeywell notice of Saint Gobain's impending nationalisation, the Americans decided to bide their time and delay negotiations until Parliament voted the public ownership Bill in February.

Officials say that Saint Gobain did not conduct the negotiations with Honeywell with sufficient energy. Minister of Industry Pierre Dreyfus then decided to take personal charge.

Under the new arrangement between CII-Honeywell Bull and Honeywell exchanges of licences will no longer be free.

Honeywell has refused a request by French Finance Minister Jacques Delors to repay the 27.1% stake – worth between $120 and $130 million – by instalments. But bank rollover arrangements could solve this problem.

Issues are still unsolved in the negotiations cover Customs duties, the scale of the dividend Honeywell will collect on its 19% geographical trading areas reserved for each partner and the price to be paid for Mini-6 computers.

French officials say that CII-Honeywell Bull would now be free to buy up small American computer firms and work with them in developing a big IBM-compatible machine.

Two based on 68000 make European debut

by Robert Parry

CONTINUING the growing trend towards 16-bit microcomputers based around the Motorola 68000 microprocessor, two more US machines are making European appearances this week.

From Fortune Systems, set up last October with a massive $8½ million in start-up funding, comes the Fortune 32:16. Corvus Systems launches the Concept microcomputer, which builds on its base of networking and disc drive products.

Starting from versions with floppy disc drives and 128K RAM, selling for £3,510 in the UK, the Fortune model range includes hard disc machines, multi-user systems, and networking via Ethernet. The operating system used is a Unix derivative, with $2 million worth of enhancements to make it more accessible to business users.

Marketing will be through a dealer network to be established under Bill Macpherson as director of UK marketing and sales. US deliveries have started, and European shipments should follow in a month or so, says Fortune's chairman, Gary Friedman.

The machine will also be sold as the Micromega 32 by Thomson-CSF, which has put up $3½ million of Fortune's current $19 million funding.

Friedman says there are also a couple of OEM deals with large computer manufacturers in the offing, giving "own-label" micros as with the ICL/Three Rivers Perq deal. He sees the Perq as competing, but at a much higher price.

Thomas Browne, Corvus' international marketing manager, also views the Perq as competition. But he sees a basic difference between the Corvus and Fortune machines.

"We are still basically a networking company," he comments, "and the machine is a workstation, not a standalone microcomputer." An interface to Corvus' Omninet is built in but, unlike the Fortune machine, multiple users sharing the processor are not supported.

A Merlin-like operating system is supplied, but Corvus is investigating the use of Unix.

The systems will sell for around £3,500 to £4,000 for a basic unit.

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EDITORIAL

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VLIELAND-BODDY . . . . . "More a multi-function workstation than a microcomputer."

DEC, HP set up third party software deals

by Maggie McLening

RECOGNISING that software now plays a major part in selling hardware, two more leading computer manufacturers have taken a leaf out of ICL's book, and announced schemes to assist third party software suppliers in selling to their customers.

Hewlett-Packard has announced a marketing programme called HP Plus, while Digital Equipment is setting up a directory of applications software, to be known as Digital Classified Software.

ICL has been operating a similar system since last year, under its Trader Point scheme.

Both Hewlett-Packard and Digital Equipment give the reason for the move as the need to supply customers with total solutions.

"We recognised the need to bring together applications packages to fill the gaps and give us leverage for machine sales," explained Graham Barnes, UK software centre manager at Hewlett-Packard.

Both companies say that all software will be vetted before it is accepted, although their approach to the degree of investigation necessary varies. Digital Equipment says that review levels will range from a cursory overview to establish that the software runs on a target system, through to an extensive functionality and documentation check.

Entry qualifications for HP Plus are stringent, and applicants must provide at least six customer references testifying to the reliability, performance, support, documentation and training given for the product.

Software that passes the test is classified as "referenced", and will be entered in Hewlett-Packard's software catalogue, the supplier's sales literature available to customers through the company's commercial and technical salesforce.

In addition to application software program development tools, languages and database utilities may be included in the schemes.

Customer support for all types of software is left squarely with the supplier by both companies and, according to Barnes, Hewlett-Packard's involvement "stops at the end of the sales cycle."

Considerable incentives are being offered to the third party software suppliers under HP Plus, apart from the use of Hewlett-Packard's salesforce.

"We are prepared to give them half-price training on Hewlett-Packard equipment for the first six months, and offer a machine at a substantial discount," said Barnes.

"Further free time or materials assistance will be available and we will also give advice on how packages should be marketed."

Digital Equipment is to acquire software on a variety of terms, but says that remuneration to software producers will normally take the form of royalties.

This new service is in addition to Digital's other applications software focuses including expansion of referrals policies, joint marketing of products for specific market areas and development of software for vertical markets.

The company says that the Classified Software scheme will assist clients to set up applications faster, and will enable them to take advantage of co-ordinated support services from Digital Equipment.

Nixdorf slow on IBM trail

by Boris Sedacca

GERMAN computer manufacturer Nixdorf is proceeding cautiously in its competitive challenge to IBM in the UK. This month the company launched two processors, both of which were announced as long ago as 1980.

First out was a new top-of-the-range product, the 8890 mainframe made by Israeli manufacturer Elbit to compete with IBM's small and medium-sized machines, the 4300 series. This was announced in September 1980 and Nixdorf began test marketing the machine in Germany one month later.

Now the company has launched its competitor to IBM's communications-oriented 8100 processor, the 8860 announced in February 1980. The hardware for the 8860 has been used for some years as the 8864 series of banking terminal products and 8862 point-of-sale systems.

Nixdorf maintains that its individual country subsidiaries are autonomous and make their own decisions to market and support a product.

Torch micro beamed at large users

by Kevan Pearson

IGNORING the small business orientation of traditional microcomputer manufacturers, a Cambridge company is unashamedly aiming its latest machine at large users.

The Torch computer, built by the company of the same name, is described by the company's chairman, Martin Vlieland-Boddy, as more of a multi-function workstation in a large installation, than a standalone system. It is based on two CPU boards, one using a 6502 chip to act as a communications and peripheral controller and the other, a modified BBC micro board from another Cambridge company, Acorn Computers, for actual processing.

Prices, when the machine is made publicly available in June, will range from just under £2,500 for a monochrome display Torch with two 400-Kbyte floppy disc drives. Colour adds about £500 to the price.

Later in 1982 the company plans to launch a more powerful version, replacing one of the processors with Motorola's 16-bit 68000 chip. The projected price for this system is just under £5,000, including colour graphics and a 10-Mbyte hard disc system.

The prices also include secretarial and word processing software, communications software, CPN – a CP/M lookalike operating system – and BBC Basic.

The smaller Torch systems can be field upgraded to 68000 specification for £355.

Torch was founded a year ago by Cimar, a management and technology consultancy, with funds from Barclays Bank.

Its start-up funding amounted to £250,000, mostly from Cimar. Now it plans to raise an additional £1 million, through Newmarket Venture Capital, which will take a £500,000 stake in the company, and a further loan from Barclays.

The system will offer mainframe communications, including IBM, as well as normal local area network links through Econet.

UK component firms show 'We can make it'

by Kevan Pearson

COMPUTER manufacturers on the look-out for British component suppliers have received an overwhelming response from small companies willing to supply their needs.

The manufacturers have been exhibiting at a new London show, Can You Make It?, organised by the CBI to boost British component and equipment suppliers, which have often been by-passed by suppliers from abroad.

American computer manufacturers were out in force at the exhibition organised jointly by the Confederation of British Industry and the Institute of Purchasing, with IBM, Honeywell and NCR all taking part.

Asked what kind of response they had received, a typical reply was "Enormous – much more than we had expected."

The three companies, all with extensive manufacturing operations in the UK, would like to use more UK products, though a spokesman on IBM's stand said that about 90% of their components are already made in this country.

The largest response was in the light engineering sector which has been severely hit in the UK during the recession. NCR reported a strong interest in making magnetic card readers.

Though it reported a strong interest in other components, there were no inquiries about making CRTs for IBM. A company spokesman said: "We'd love to have a CRT made in the UK, but no one is interested. It is too specialised."

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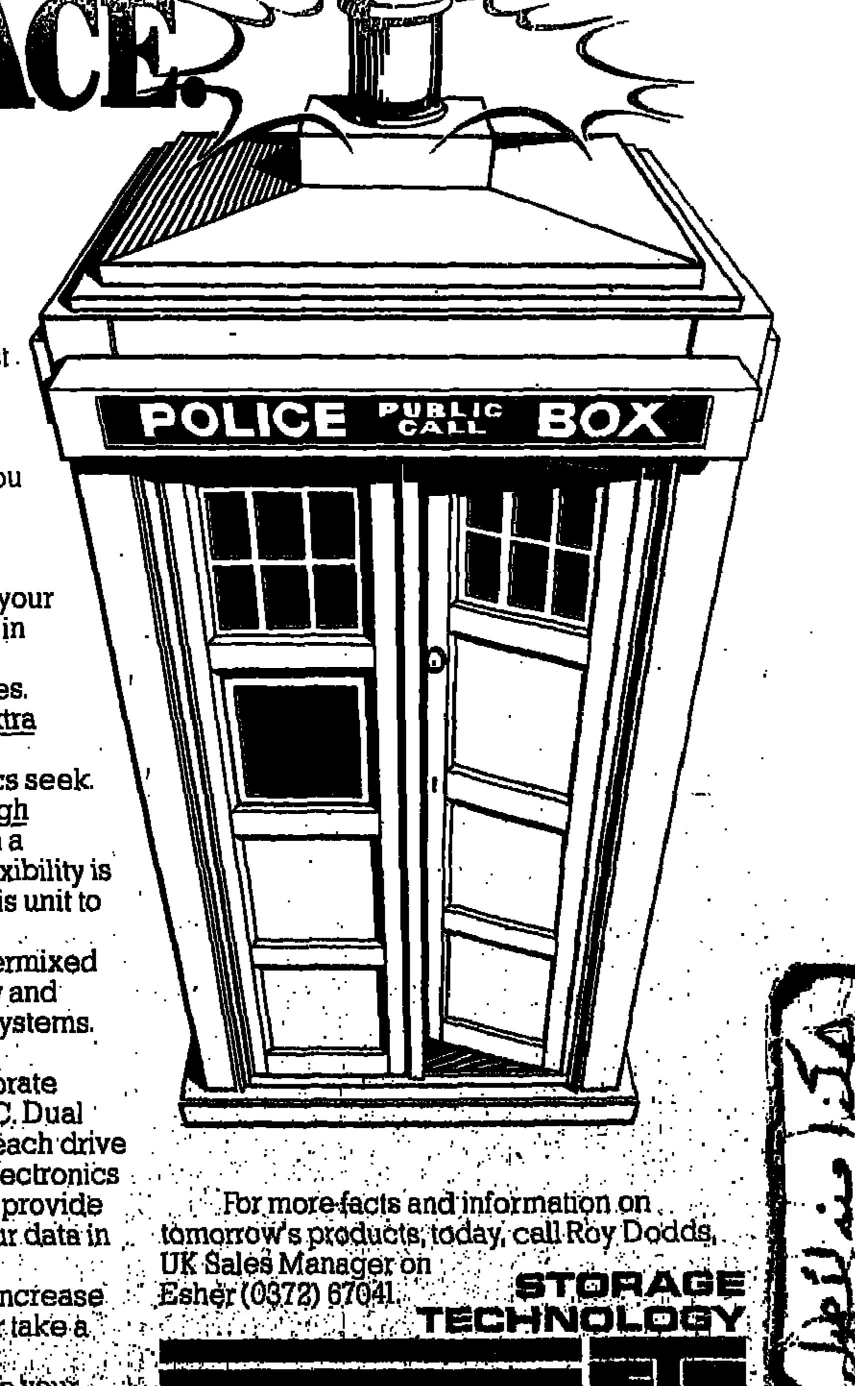

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Centre-file replies to turnkey vendor threat

by Boris Sedacca

COMPUTER service bureaux are becoming increasingly aware of a threat from minicomputer-based turnkey system vendors who are taking away some of their markets.

Centre-file, the National Westminster Bank bureau subsidiary, has responded to this threat by becoming an OEM for Digital Equipment (DEC) and selling turnkey systems itself.

"Most bureaux are facing the problem of holding their market share. They have to capitalise on technology without jeopardising their existing revenue base," explained John Tebbey, manager of Centre-File's minicomputer services division, formed in October 1980.

Since its formation, 51 customers have joined up, of which 47 represent new business, the other four having come over from Centre-file's traditional batch services customer base.

"The area under greatest threat is small to medium-sized businesses. For instance, the basic ledger services constitute around 5% of Centre-file's revenues, and the same again for professional services to legal and accounting firms for things like time recording. These are areas of threat."

Tebbey added that payroll services which provide the backbone of Centre-file's business are not threatened because the requirements are rigidly structured and customers "do not want the hassle" of developing their own systems.

Centre-file has over 2,500 customers of which about 2,000 are users of the payroll service. The remainder are regarded by Tebbey as potential customers for minicomputer services.

Another area, retail and finance, provides about 10% of Centre-file's revenues but is not as threatened as other areas because it consists of complex retail and merchandising systems best handled on a mainframe.

"It's a question of fitting in with a basic strategy of providing a centralised service. Do you tell customers what is on the other side of the rainbow or do you wait until they are about to defect? We want to tell our customers that we are in a position to provide what they want.

"We are now prepared to trade in software and we are agents for a US software house called Amcor which has written a database system, Ambase, running on DEC's RSTS operating system," he said.

According to Tebbey, Ambase has strong development facilities which allows Centre-file to get into application areas which they would normally shy away from, and to spawn derivative applications software products.

LEE . . . *"I'd be surprised if we sold fewer than 50 systems a year."*

Apple in fresh bid for US education market

by Howard Karten

A RENEWED bid to exploit the US education market is being made by Apple. A bill currently pending in the US Congress would give Apple significant tax breaks in return for the company's plan to give an Apple II to each of the more than 83,000 public elementary and secondary schools in the US.

In the past ten years, the US education market for computers has had several ups and downs. Educators have become first enraptured at the promise of computers in education, and some experimentation, only to become cynical over the costs and real potential of the computer.

Apple Computer now believes the market is ripe for attack.

Some 25% of the company's installed base of 450,000 machines are currently in the educational market, according to company spokeswoman Renee Olsen. The company sees it as a particularly lucrative market, given that multiple sales often occur and that local schools districts often become de facto assistants in marketing the computers in their schools.

Apple co-founder Steve Jobs has been described as a "computer literacy advocate", so the Apple give away plan is a mixture of good old-fashioned idealism as well as practical business sense — one educational sale often budgets another, and Apple has observed that kids with computer experience sometimes influence their parents' buying decisions.

Apple is also making efforts to sign up publishers of educational software. Most recently, the company signed two agreements with the American publishing firm Reader's Digest.

It calls for Apple to provide technical information and other support to the publisher, with Reader's Digest developing educational software for the Apple systems.

● **Tom MacSweeney adds:** Apple says it now has an installed base in excess of 550 computers in Irish schools, following the completion of installations under its contract with the Irish Department of Education.

Under the development programme for Irish schools, about 25,000 students will participate in computer studies on Apple IIs this year.

The company operates from its manufacturing plant in Cork, where it has invested £1 million.

Tie steps in as PTTs relax hold

by Alan Simpson

THE move towards liberalisation of the telecommunications industry in the UK has attracted a major US company to establish a London base.

Tie International, which claims to be the third largest manufacturer of microprocessor-based communications systems in the US after AT&T and GTE, believes that relaxation of control by European PTTs will generate considerable marketing opportunities.

Tie's managing director Gerald Power hopes that British Telecom and the British Standards Institution will shortly announce a firm and positive set of industry standards. Until then the company, which has spent over $1 million in setting up the international operations, will consolidate its existing connections with such companies as Cable and Wireless.

Power says that once Tie has obtained equipment approval and sales volumes have been established, the company will be looking at the possibility of manufacturing its range of programmably controlled telephone communications systems in the UK.

Micro package 'lowest priced CAD around'

by Maggie McLening

A MICROCOMPUTER package which claims to provide the lowest-cost CAD facilities on the market has been launched by Slough-based KGB Micros.

Developed by Hytech Consultants, advisors in computer-aided engineering and project management, it sells for under £10,000, including a graphics screen and multi-pen intelligent plotter. It is called Micro-Designer and incorporates facilities normally only available on the more expensive CAD systems, according to Hytech Consultants.

Drawing instructions may be entered through the keyboard, from plotter feedback, or via a separate digitiser pad, using pre-prepared symbols or part drawings if required. Symbols can be rotated, scaled, mirrored or repeated as necessary, with shading and cross-hatching facilities available as part of the standard package.

Micro-Designer has been developed from an existing system, also designed by Hytech, which runs on the DEC RT11 operating system. Hytech claims that full compatibility between the two systems has been maintained. This means that drawing files, which are all in Ascii code and therefore in readable format, may be transferred from one to the other.

The micro version runs under the industry standard CP/M operating system, which offers potential users a wide choice of alternative equipment and opens the way to linking with other off-the-shelf software.

Ron Lee, managing director of Hytech, whose 20-strong UK user base includes the Wormold Group and Mather & Platt, expects a fair percentage of the company's projected £250,000 1982 turnover to come from Micro-Designer sales.

"Four of the packages have been sold already, in fact one has been out on a test site for nine months, and I would be surprised if fewer than 50 a year were sold," he said.

KGB Micros, which is also marketing the IBM Personal Computer, is selling Micro-Designer on the Intertec Superbrain with 64K RAM which is helping to keep the price low.

"We are really breaking new ground in competing with the normally very expensive CAD systems," commented Sandy Saunderson, managing director of KGB. "It's a completely new marketplace, but unfortunately engineers and architects are very conservative people."

US acts to halt 'brain drain'

by Jack Gee

AMERICAN computer experts hired by the French government to run its new World Centre for Information Technology and Human Resources have been summoned to Washington to attend a Senate investigation into a "brain drain" from US to Europe.

Jean-Jacques Schreiber, the French writer and politician who played a leading role in setting up the French centre, has also been asked to be present for a hearing by the senate's permanent committee on technology.

The summonses reflect what European experts are describing as increasing reluctance by government and industry in the US to provide access to scientific and technical information for foreigners.

Computer industry representatives in Paris said there were increasing signs that the US administrations's efforts to curb exports of sophisticated computer technology to Eastern European Communist countries were now being directed against Western Europe as well.

SALES BRIEF

Over £½m DS 990s for feed mills

AN ORDER in excess of £500,000 for 11 Texas Instruments DS 990 Model 9 computers has been placed with the Bristol office of Scan Computers by feedstuffs manufacturer Dalgety Spillers. A range of financial software including sales ledger, order processing, and a report generator written by Scan is included in the order, which is the company's largest this year.

The first computer will be installed at once at Dalgety's Avonmouth data processing headquarters, and the other 10 will be delivered to regional feed mills during the following year.

Honeywell ousted

UK supplier of reinforcement materials for the construction industry BRC has replaced a Honeywell Level 62 system with a Burroughs system worth £200,000 consisting of a B1985 dual processor with one Mbyte of memory. It is being used at BRC's Stafford head office.

Bank clusters

TWO clusters of three DEC PDP-11/70s have been installed by Bankers Trust, ninth largest bank in the US. One of them handles money market dealing previously done manually, and the other provides online computing to the bank's European branches in Madrid, Jersey, Milan and Paris.

Faster messages

BRITISH Telecom has ordered £600,000 worth of message switching equipment from Case, Rickmansworth-based computer communications equipment supplier. The equipment will be used for filing and recording of incoming telegrams and telemessages, and to speed up passage of messages at Main Telegraph Offices.

Minis for BSC

FERRANTI Computer Systems has sold five Argus 700 minicomputers to the British Steel Corp for its Port Talbot Works bringing the total number of systems there to 33. Two will be used for energy management in a dual processor configuration, and the other three will be installed on the slab-reheat furnaces in the hot mill. All will be programmed in Coral 66 by British Steel.

£3m upgrade

BELFAST based Northern Bank, a subsidiary of the Midland Bank, has ordered three Honeywell DPS 8/52 large mainframes as part of a £3 million upgrade of its computer systems. Two of the machines will be linked to support the bank's online branch accounting network covering 123 branches. The single DPS 8 will be used for batch updating of customer accounts.

More control

THIRTEEN outstations are to be supplied by Remsdaq in a contract worth £150,000 to expand the control system it installed for the Stour Water Division of the Anglian Water Authority. Placed by consultants from the Telecommunication Projects Division of Burmah Engineering, the order is part of the second phase of a project to extend supervision and control from the Colchester centre to surrounding districts.

Conference

A CONFERENCE aimed at helping those seeking finance for the first time has been co-sponsored by Computer Weekly and Barclays Bank. Called First Time Financing, it will be held at London's Kensington Close Hotel on June 17, not May 25 as stated last week. Booking coupon is on Page 19.

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But Abacus won't, especially when you order Digital Equipment.

And neither will Henrietta. Like the Abacus service, she's lovely in all weathers.

Next time you ring Abacus for Digital, make sure you ask for your copy of the latest poster, showing Henrietta in the rain.

*Trade Mark of Digital Equipment Corporation.

IBM will return to tape drive market by 1983

by Boris Sedacca

TAPE storage has taken a back seat lately with the trend towards online disc storage, but IBM is about to make significant new moves in the market.

According to market research consultant Frost and Sullivan, IBM will launch two families of tape drive products for deliveries in 1983. One family will be for traditional batch data transfer in stop/start mode, while the other will be for fast disc to tape dumping; that is, streamer tape.

Frost and Sullivan predicts that the latter drive will have also moderate stop/start performance.

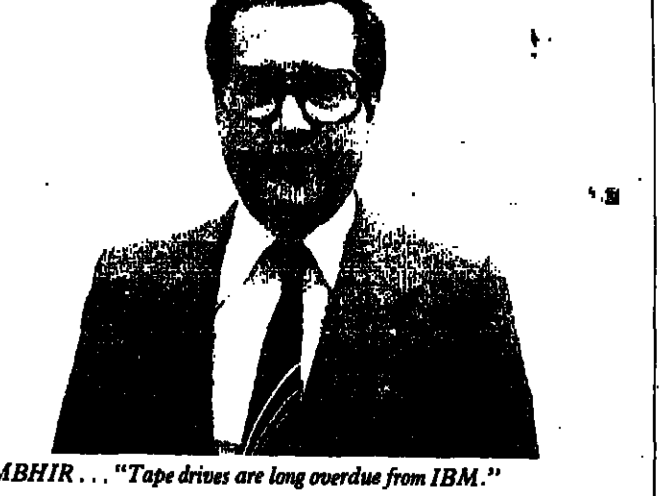
This additional feature is needed because not all files are kept on disc storage, explains Suman Gambhir, European product marketing manager at plug-compatible peripheral manufacturer Storage Technology.

"IBM is tackling two distinct markets with these new products. The streamer tape is for machines at the top end like the 3033, 3083 and 3081. IBM has not announced new tape products here for about eight years."

He adds, "The conventional start/stop tape drive is targeted at the smaller 4300 series mainframes where there is less demand for online storage. IBM recently announced its 8809 family of tape drives but the market reaction has been poor, so it began offering older and slower models previously used on larger mainframes, the 3420."

Frost and Sullivan further contends that the products from IBM's competitors will be "two years behind due to compatibility problems."

Gambhir describes this statement as untrue: "We recognise that new product announcements on tape drives are long overdue from IBM and we have always been geared up for it."



GAMBHIR . . . "Tape drives are long overdue from IBM."

Speaking up for small user

by Howard Karten

PHOENIX, Arizona. – One of the perils of buying a computer has always been the risk of disputes with the vendor when the system does not perform as promised.

Large users have always had both the economic clout and in-house expertise to avoid resorting to the law, but small users have often been at a disadvantage.

Now in the US comes an effort to solve the problem and it might well provide a lead for similar organisations in the UK. The Independent Computers Consultants Group recently formed and based in Phoenix proposes to knit together consultants in cities throughout the country.

Co-founder Brooks Hilliard, a consultant, explained that the aim of the group would be to provide some economic clout for smaller users. A small business computer user locked in a dispute with a vendor would call in an ICCG affiliate, who would attempt to settle the issue.

If the consultant felt the problems were caused by the user, he would be in a position to offer expertise in solving the problem.

If it appeared to the ICCG affiliates that the problem was caused by the vendor, an attempt would be made to negotiate a resolution satisfactory to both parties. The implicit threat of concerted action by notification of ICCG members would presumably make the vendor more amenable to co-operation.

Failing that, the ICCG affiliate would be in a position to serve as an expert witness for a lawyer who might later be called in.

Wang shows remote local network

OLISA . . . Wang has solutions to voice and image transmissions.

by Donald Kennett

REMOTE Wangnet, the portion of Wang's electronic office designed to spread the shared facilities of one office to users on other sites, had its first UK showing at Online's Local Area Network Show in London last week.

Announced alongside the Wangnet broadband local area network last year, Remote Wangnet consists of software that enables a VS mini to support a network of OIS shared logic word processors, or its Alliance enhanced successor, connected by leased lines.

Users at terminals attached to any of the processors can call facilities resident in any of the processors by name, as if they were available on the local processor.

Enhancements to be added this year include support for 2200 series minis and VS minis (in August) and for the Wangwriter standalone word processor (by the end of the year).

Remote Wangnet is part of a range of communications facilities that are becoming available by stages. Wangnet itself, the broadband local area network designed to provide a variety of types of interconnection path on the same cable including video and voice, is becoming available in the form of the cable itself and fixed frequency 9,600 bit per second modems for dedicated channels.

In July, these should be joined by 64 Kbit fixed frequency and 9,600 bit changeable frequency modems and the Data Switch necessary to control them.

Another communications system, the Wise Wang intersystem exchange first available in the UK last September, is now supported by release two software. This means that up to 32 OIS processors with a total of 1,000 terminals attached to them can be interconnected and can support interactive processing functions. Previously, only four systems could be interconnected.

Marketing manager Ken Olisa says: "Other companies are basically communications engineers, but we are an office automation company. We are saying we can solve problems with voice and image transmission systems now."

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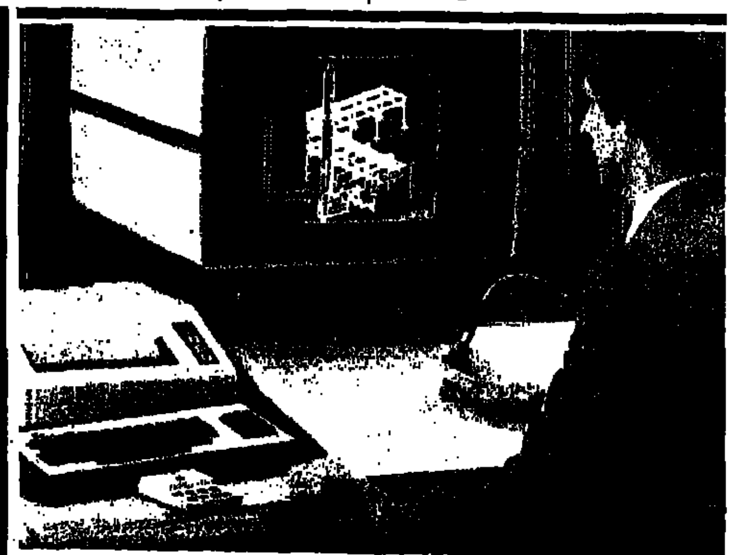

The Computervision system incorporates data from the phases of plant design into one model.

Model building system reflects price drop

by Maggie McLening

CAD/CAM systems developer Computervision has released a 3-D "model building" system for construction engineering. Prices start at £65,000, reflecting the steady drop in price of this type of system, which is largely due to falling hardware costs.

Computervision, estimated to have a 40% share of the worldwide CAD/CAM market, has timed the launch of the computer-aided engineering (CAE) system to coincide with the opening of its new training centre in Basingstoke, tangible proof of its 42% increase in profits for 1981.

Over £15 million has been invested in the development of the CAE system, which Computervision claims will be able to meet the demands of all sizes of business.

A wide variety of applications can be combined into a single information database, to ensure continuity and integrity of the overall design. For a small company, the database would be a Designer M standalone system, but larger companies would probably need a Designer V multi-terminal system.

Portable printers launched

by Kevan Pearson

TRANSDATA, the Havant-based microcomputer and terminal manufacturer, has launched a range of portable, printer terminals called the Miniterm 2000 range.

There are three terminals in the range, from the 2300, with up to 4,000 characters of non-volatile memory, a built-in acoustic coupler for 300 baud transmission and hardware connections for up to 9,600 baud communication to the Miniterm 2100, a receive only terminal.

All models feature a V24 interface and 160 characters per second thermal printing across 80 to 132 columns in "true" upper and lower case characters. The V24 serial interface can receive and transmit at up to 9,600 baud.

NEWS BRIEF

£350 million comms deal

THE largest satellite communications contract ever placed, about £350 million, has been awarded by Intelsat to an international consortium led by Hughes Aircraft in the US. Major contractors include British Aerospace in the UK and Thomson-CSF in France.

The contract is for five [illegible] channel digital communications satellites, the first of which [illegible] launched early in 1986, [illegible] tions for 11 more could [illegible] eventual value to £800 million.

Thorn pays £1[illegible]

THORN-EMI has paid £[illegible] million to the BOC Group for acquisition of its two [illegible] vices subsidiaries, Soft[illegible] Sciences and BOC Datasolve [illegible] cluding cash for repayment [illegible] intra-group indebtedness [illegible] businesses acquired by Thorn-EMI have a combined [illegible] turnover of £30 million.

$300m loss

OFFICE products manufacturer AM International has filed for [illegible] organisation under Chapter [illegible] the US bankruptcy laws. The company lost almost $300 million [illegible] the past 18 months but [illegible] to its chairman, Joe Freeman [illegible] will continue to operate.

Terminal boost

ABS COMPUTERS, the [illegible] minicomputer manufacturer, announced a series of enhancements for its 508/A multi-[illegible] terminal launched in January [illegible] improvements include support [illegible] Wordstar, the word processing package from Micropro, [illegible] disc storage, and remote [illegible] nosis. Prices start at about [illegible]

Wider range

EQUIPMENT supplier [illegible] Data Products of Stroud [illegible] panding its range with OEM [illegible] puter peripherals from [illegible] Technology, Philips, Teac [illegible] bec. A new range of [illegible] floppy disc drives from Philips [illegible] be available.

UK agent

HARROGATE-based RX [illegible] puter, subsidiary of computer [illegible] sultants Mackintosh, Mack[illegible] Johnstone & Partners, has [illegible] apponted exclusive UK agent [illegible] Software Clearing House of [illegible] cinnati, Ohio.

Ex-Nexos staff

DISTRIBUTION rights [illegible] British-built microcomputers [illegible] Haywood Electronics Associates [illegible] have been acquired by King[illegible] based Lantech Information Systems. Set up by three former staff of Nexos, the BTG's [illegible] office automation company, Lantech will supply and support [illegible] and business application packages for Haywood's networking [illegible] Managing director Barry [illegible] Johnson was Nexos' marketing manager.

Overseas links

BRITISH Telecom's international packet switched service [illegible] been linked to Japan from [illegible] beginning of this month. Transmission charges are 10p a [illegible] plus 4p for each 640 bytes [illegible] countries to be linked in this [illegible] include France, Hong Kong, Singapore, Sweden and Spain.

European HQ

US manufacturers of [illegible] video terminals, Zentec Corp [illegible] to set up a European headquarters in Wallington, Surrey. Called [illegible] tec International Inc, it [illegible] headed by David [illegible] sales manager of Comma [illegible] ters, and will concentrate [illegible] OEM sales. The company [illegible] over $1 million direct sales [illegible] the first year.

Motorola goes for high volume, low power chips

RUNNING hard to catch up at the low end of the single chip microcomputer market, Motorola has announced a family of 8-bit processors to compete directly with the dominant 4-bit chips. The family, centred around the 6804 processor, will be pin-compatible with Motorola's existing 6805 family.

Development of HMOS and HCMOS versions is proceeding in parallel, with Motorola co-operating closely with French company Thomson-EFCIS. Under the mutual second-source agreement, each company will market products developed by the other.

A similar arrangement is already in force between Motorola and Thomson-EFCIS for the 6805 family devices.

Despite the combined effort to make best use of available resources, the Motorola-designed chip is still very much in the design labs, says Brian Wilkie, Motorola's product marketing manager for NMOS microcomponents in the UK. He does not expect it to be introduced until the first half of next year.

"Yes, it is late," says Wilkie. "Motorola is traditionally so." But he sees the 6804 filling "the only market niche left" for Motorola still to go for, high volume and low computing power. These price-sensitive applications, including home appliances, electronic games, telephones and automotive applications, are dominated by 4-bit devices and already served by established 8-bit chips from General Instruments and newcomers like the recently revealed Intel 8020H.

Wilkie sees the "stripped down architecture" of the 6804, intended to complement the 6805 family, extending options available to system designers by giving more performance than 4-bit chips at about the same price. The 6804 price will be targeted at that of the Texas Instruments' TMS1000 and National Semiconductor's COPS 4-bit chips.

Internally parts of the processor are serial, giving a smaller but slower CPU, but to programmers – who represent the most expensive part of a system, Wilkie points out – the 6804 is to all intents an 8-bit machine. There are some changes from the 6805 instruction set to help make up for the lower speed, but conversion software will be available to move 6805 applications on to the 6804.

The pin-compatibility with existing 6805 devices and this compatible, if not identical, software provide an obvious downward migration path for 6805 users moving into high volumes and not needing the full capability of the 6805. Likely application areas are seen by Motorola to include automotive electronics and telecommunications.

AMD puts 30% spurt on bit-slice processors

FASTER bit-slice processors are on their way through developments of Advanced Micro Devices' 2900 family. The 2900 series devices, widely sourced, are the leading 4-bit microprocessor slices.

From AMD itself come versions of the 2903 (an enhancement of the basic 2901) offering a 100 nanosecond micro-instruction time, a 30% increase in speed. These are the Am2903A and the Am29203, which also adds extra I/O porting and on-chip binary coded decimal (BCD) arithmetic.

The Am29203's ability to perform BCD additions and subtractions automatically and to convert between binary and BCD will make it well suited to business machines, says David Brand, AMD's UK general manager.

● Meanwhile National Semiconductor has introduced a higher speed version of the 2901, the IDM2901A-2. This runs in the 80 to 90 nanosecond range, faster than other available 2901 parts, including AMD's.

NatSemi into 32K EPROM

NATIONAL Semiconductor's range of CMOS EPROMs is to include its first 32 Kbit device. At the same time National has announced it has halved the price of the 16K parts in the range.

The 32K EPROM, NMC 27C32, will be manufactured using National's P²CMOS technology, like its smaller brother the NMC 27C16. Organised as 4K by eight bits, the UV erasable device will be offered in 450ns, 550ns and 650ns speed ranges, with a 350ns part coming later. Samples are due over the next few months.

FISHER . . . "Attracting a new type of customer."

Magic at half the price

A CHANGE in the type of customer wanting its micro development software has led SPL to offer the package on smaller host machines at a lower price. Magic is now available to DEC LSI-11/23 users for £5,000 – half the price of the previous standard package on a Vax computer.

"We are attracting a new type of customer," says Jim Fisher, manager of SPL's Abingdon research centre.

These typically employ about 20 people and use an in-house DEC 11/23 machine running under the RSX-11M operating system, Fisher adds.

With the Magic package users can develop applications for LSI-11/03, Falcon SBC-11/21, 8086, 6809 and 68000 systems with a high level language and program portability.

Micros to monitor electricity supply

A REVOLUTIONARY new plan for controlling and monitoring the electricity supply could bring massive contracts to UK microelectronics companies.

The success of South Eastern Electricity Board's experiment to put microcomputer-based units in consumer premises will first mean units for each of Seeboard's 1.7 million consumers, and eventually the prospect of a unit for every one of the 20 million electricity consumers in the country.

This summer Seeboard engineers will start a year's trial with a credit and load management system at the homes of 300 consumers in the South-east and the Midlands. The units, built around twin Intel 8022 microcomputers, will replace the conventional meter and cut-out fuse, and be connected to the electricity boards' main computers by phone links.

For customers this should give immediate readouts of the bill, the ability to pay it by using the keyboard to instruct banks to transfer money, and cost savings through allowing different levels of electricity supply. For example appliances like freezers and immersion heaters, that can be interrupted for short times without being noticed, would be charged at a lower rate.

Load shedding by switching off large blocks of appliances for short periods is the main advantage to the electricity boards.

The 300 trial units should give an assessment of the financial savings to householders and of the acceptability of remote meter reading. Gas and water companies are also looking at the system.

An estimated 870 dealers will read this ad. Only 20 will benefit.

Dealer Enquiries are now invited.

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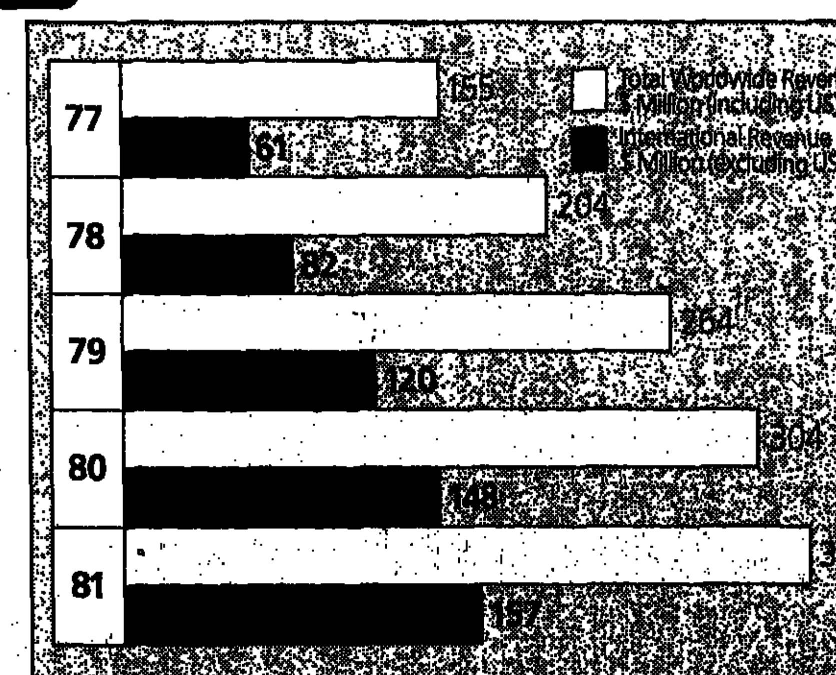
Growth in the US, and in Europe.

MAI has had an enviable success, in the States and in Europe. With user acclaim, such as winning the Datapro survey for user satisfaction five years running. With hardware achievements, such as the launch in 1971 of the Basic Four computer system, the first mini-computer designed specifically for small businesses. And, most importantly, with sales successes.

MAI has worldwide revenues over $330 million. MAI has the world's largest contract maintenance organisation. MAI is long established, innovative – and growing.



Europe is vital to MAI

MAI has been operational in Europe since 1970 and in 1978 opened a manufacturing plant in Holland.

Nearly 50% of MAI's worldwide sales are outside the US, with Europe accounting for over a quarter.

We are not simply a staging post for the US headquarters.

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The MAI Specifics. Hardware. Software. Support.

If you're interested in MAI, we'd like to brief you on our full operations. Please contact us soon. But here is a quick overview of MAI.

More than 4,000 MAI systems are installed in Europe. They range from a brand new business micro, the S/10, up to the state-of-the-art 32-bit super-mini, the Model 810, launched this month.

The MAI operating system is common to all our kit. And the packages – all available now – include ones for the Motor Trade, Plant Hire, Hotel Trade, Printers, Manufacturers and many more. And the marketing support is considerable, all to help you sell.

The offer is attractive, the standards are high.

It is very rare for a demonstrably successful international computer company to advertise for dealer outlets. MAI is seeking higher sales and increased profits in 1982 and beyond. Consider growing with MAI.

Telephone, telex or write immediately to Peter Christou at MAI if you wish to share in MAI's growth in Britain.

MAI United Kingdom Limited, Black Arrow House, Chandos Road, London, NW10 6NF. Tel: 01-965 9731. Telex: 8954451.

MAI

Analysts see boom in electro-technology

THE past two years have seen a revolution in the way computer companies are viewed by financiers in the City. This has led to more money reaching companies in the industry and to the gradual emergence of an identifiable group of financial analysts who study and report on the sector on behalf of investors.

Their reports, which are still few and far between compared with the vast amount of paper produced by the Wall Street analysts in the US, make interesting reading, because they have a direct bearing on the willingness of investors to put money into computer stocks.

Forming one of the key teams in this sector are Peter Minton and Paula Marsh, of stockbrokers Laing and Cruikshank, who have just produced a major study of the electronics and computer sector.

The report, called Towards 2001, is a strategic guide to investors contemplating the best place to put their money over the next decade and up to the end of the century.

It also provides a clear view of how two cautious analysts see the industry developing over the next 18 years.

According to their report, average growth in electronics should be about 14% to 16% per year compared with growth in the electrical industry, which is estimated at between 3 and 5%.

Where the two industries combine to produce electro-technology, however, the growth projections become staggering – and Marsh and Minton have a reputation as conservatives in their forecasting. They suggest expansion of 35% to 40% will be the norm.

In the short term, up to 1986, the report identifies five key areas where growth will be most concentrated and rapid. These are the office of the future, data processing communications networks; electronic drives for industry, including automation and robotics; computer aided design, manufacture and testing, and electronics in consumer products.

After 1984 the analysts reckon that products for consumers and commerce will be the key growth sector, with security a strong business serving both these areas and industry.

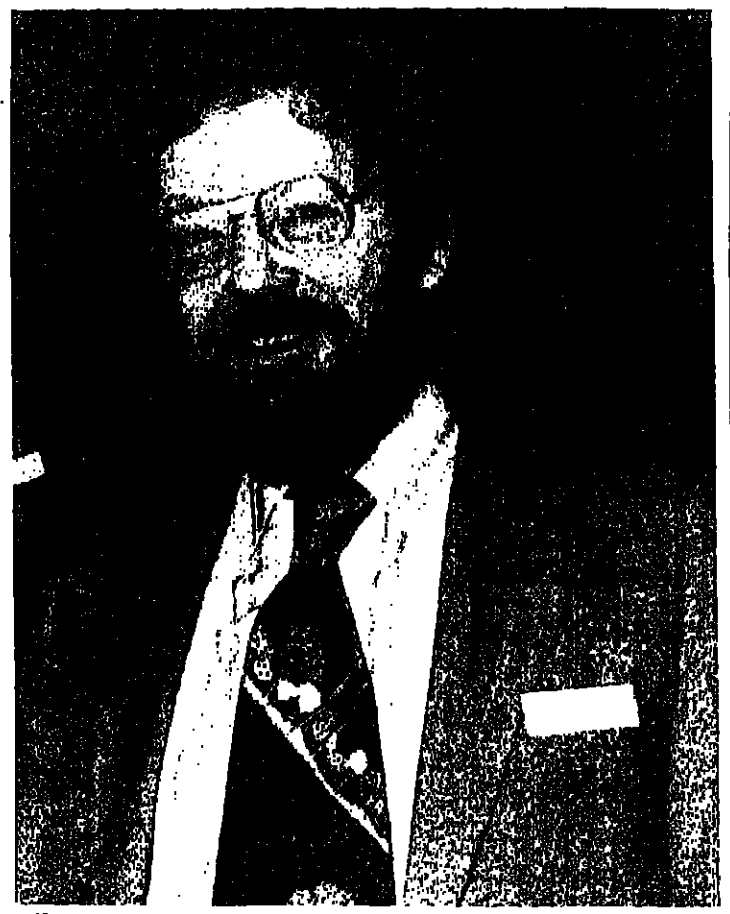
Towards 2001 says that compared to the support given to their major overseas competitors by their own governments, the amount received by UK companies via government programmes has been pitiful.

In commercial use, the dominance of electronic data processing processes and communications will combine with what is essentially electro-mechanical equipment, to provide totally integrated office environments. In a decade electro-mechanically controlled appliances in the home will have almost vanished.

For the period 1990 to 1999 the report foresees a complete integration of much of the rest of the office, in effect any of the peripheral items not already included in the "office of the future", which should be well established by 1990.

This is the period in which Minton and Marsh see the beginnings of the home office as a remote link to the centre, using extensive electronic mail facilities which by 1991 will have all but replaced letters, facsimile and telex.

Looking at the electronics market in money terms, the analysts expect the market in all forms of electronics goods, including consumer products and components to grow by 13%, net of inflation calculated at 10%, from £9,095 billion in 1981 to £25 billion in 1986. In the same analysis, data processing is seen as growing from £2.1 billion in 1981, to £6.7 billion by 1986, a net growth rate of 14% over the five years.



MINTON . . . A cautious look at the prospects for electronics and computing.

The report concludes by looking at the prospects for a number of companies and a short review of those companies is given below.

ICL. Peter Minton had long been one of the City's most vigorous critics of ICL and of its performance, prior to the appointment of the new management team. It is, therefore, interesting to note that Minton is forecasting a profit for ICL this year of just £5 million. This is between £10 and £20 million less than the average forecast of £15 to £25 million coming from other City analysts. Based on that level of caution it is interesting to note that Minton forecasts a pre-tax profit at ICL of £150 million in 1986. The pattern of profit growth and stabilisation at ICL is reflected in a return to profit this year, and a profit of £75 million two years from now.

Racal. Profits at Racal are shown making a steady, if slightly less spectacular move from this year's forecast £97 million to £235 million for 1986. This is a slight improvement in the company's growth rate from 21.9% pa in the years between 1976-81, to 24.6% pa between now and 1986.

Ferranti. Taking the unique blend of electronics and defence markets supplied by Ferranti, Minton foresees a near doubling in the annual rate of growth at the company, from 12.9% over the past five years, to 20.3% in the next five years. He expects profits to move from a forecast £22.5 million this year, to £47 million in 1986.

Steady advance of NMW

NANTWICH bureau NMW h[illegible] turned in preliminary re[illegible] which show a continued grow[illegible] profit and turnover.

NMW, which suppli[illegible] stockbrokers with a specialised a[illegible] counting and share dealing pa[illegible] age, pushed turnover up [illegible] £2,358,911 for 1981, compar[illegible] with £2,118,156 in 1980.

The performance was achie[illegible] in the face of light Stock Exchan[illegible] trading which has a direct bear[illegible] on the company's turnover. NM[illegible] handles about 35% of all tran[illegible] tions on the Stock Exchange [illegible] generates revenue by charging pa[illegible] ticipating brokers for each [illegible] done via the company's com[illegible] ters.

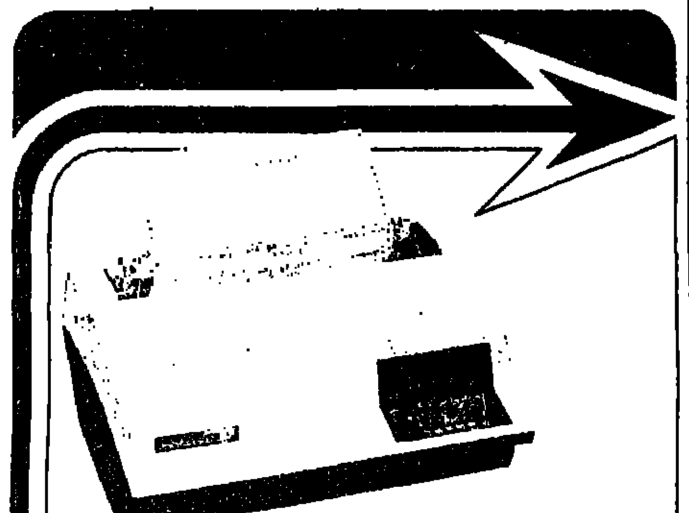
Profits before tax rose f[illegible] £505,220 to £544,933. A substa[illegible] tial contribution to the impr[illegible] ment came from £137,475 in[illegible] paid to the company on its ma[illegible] £1 million of cash.

Case beats price fall

DESPITE a fall in the pric[illegible] modems, one of its principal [illegible] ducts, Rickmansworth-based [illegible] turned in profits and sales [illegible] ahead of forecasts. Turnover [illegible] by £5 million to take the com[illegible] to a final figure of £17 milli[illegible] 1981.

Profits, widely forecast by fi[illegible] cial analysts to be around £1 [illegible] lion, were £1.36 million.

The good performance at Ca[illegible] particularly important for the c[illegible] puter industry because Case [illegible] were entered on the Stock [illegible] change late last year. The perf[illegible] ance of computer industry [illegible] comers like Case will set the [illegible] for a number of small compa[illegible] waiting in the wings to offer [illegible] shares to the public this year.

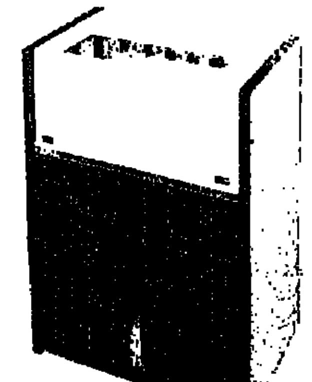


CENTRONICS

MODEL		BASIC UNIT PRICE	MODEL		BASIC UNIT PRICE
730-2	100 cps	£375	152-2	150 cps	£615
730-4		425	152-4		745
737-2	80-100 cps	425	352	200 cps	1,400
737-4		475	353		1,700
739-2	100 cps	504	792	60 cps	1,450
739-4		554	6080	600 lpm	5,000
150-2	150 cps	499			
150-4		562			

Plus full 700 series range from £500 – £1,320.

Interfacing to the following causes no problem: IBM 3270, Series 1, System 34, Data General, DEC, Burroughs, Datapoint, Apple, PET and most others.



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RUSHTON . . . Prospects for the coming year are encouraging.

Turnover up, profits slip at Burroughs UK

FOREIGN exchange losses of £3.7 million helped to reduce Burroughs' UK division's profits from last year's £17.9 million, to £11 million this year.

This slide in the after-tax profits started when the tax bill rose by £1.2 million, to £4.1 million.

Trading profit before interest charges and tax were almost static: £19.0 million, against 1980's £19.3 million. But adjusted for inflation this represents a fall of about 12%.

Turnover, which gives a reasonable picture of the company's recovery potential, rose 10% from £148.0 million in 1980, to £163.4 million in 1981.

Laurie Rushton, Burroughs' UK managing director, reckons that these results were very favourable when viewed against the UK's economic climate. Rushton said the profit figures take into account substantial investments in major new support facilities for UK customers. The company has established four new support centres.

Despite the generalised gloom pervading most chief executives' statements, Rushton sees prospects for the current year as encouraging. He said significant product developments were providing Burroughs with the impetus needed under these difficult economic conditions.

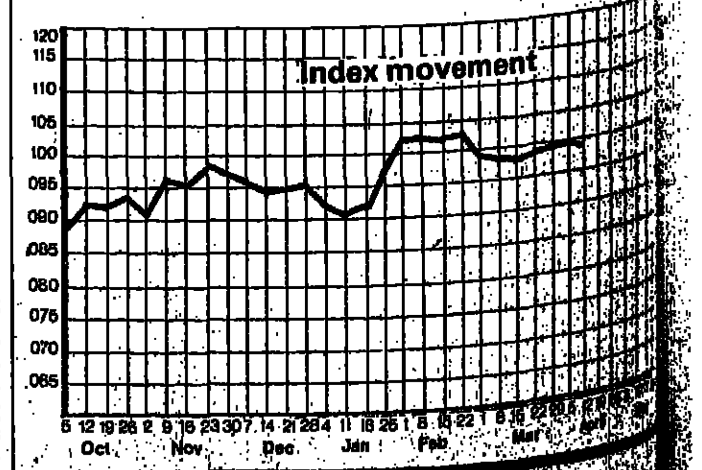
CW SHARES TABLE

Date 16/4/82 Index: 97.26 Change -1[illegible]

Pence 1982 High	Pence 1982 Low	London Stock Exchange Stock	Pence Price	Pence C'nge
190	181	ACT (App Comp) (25p)	190	+5
174	160	BOC Int. (25p)	161	-5
23	18	B Bov Kent (25p)	18	-1
118	101	Chubb (20p)	114	-4
62	48	Cole Group (25p)	62	+1
250	233	C.A.S E. (20p)	233	-7
730	606	De La Rue (25p)	606	-17
280	235	Extel (25p)	270	-8
690	626	Ferranti (50p)	680	-10
847	787	GEC (25p)	787	-22
64	33	ICL (25p)	50	-4
47	41	Kalamazoo (10p)	47	-
277	223	Koda Int (25p)	247	-20
278	215	Memec (10p)	250	-20
132	110	Muirhead (25p)	118	-2
278	218	N'mia ('81) ($0.05)	240	+3
£36½	£28½	Norsk Data	£31	+£2¼
320	288	Office & Elect (25p)	315	-5
523	448	Philips Lamp (f10)	523	+1
388	349	Plessey (50p)	385	-10
97	65	Quest Auto (10p)	65	-2
430	353	Racal Elect (25p)	375	-10
260	171	Rediffus-on (25p)	228	-22
468	418	Thorn-EMI (25p)	423	-12
90	75	UC&T (50p)	76	-2
		OTHER MARKETS*		
90	80	Bus Comp (10p)	88	-3
657	415	Comp Serv (£1)	630	-
134	75	Consult (C&P) (10p)	134	+4
252	252	IO Tech (25p)	252	-
170	122½	NMW (£1)	122½	-2½
68	43	Rolfe & Nolan (10p)	45	+2
105	75	ScanData (10p)	95	-
195	165	Star Comp (10p)	165	-3
106	100	Trident Comp (10p)	100	-4
95	60	Zygal Dyn (5p)	62	-2

$ 1982 High	$ 1982 Low	US Stock	Price	C'nge
29½	19¾	Amdahl	[illegible]	[illegible]
20¾	14¾	Apple Inc	[illegible]	[illegible]
28	23¼	Auto Data Pro	[illegible]	[illegible]
36½	31	Burroughs	[illegible]	[illegible]
46¾	36⅛	Commodore	[illegible]	[illegible]
13¼	8⅛	Comp Auto	[illegible]	[illegible]
15	12½	Comp Sciences	[illegible]	[illegible]
14½	12¼	Comshare	[illegible]	[illegible]
35½	30¼	Control Data	[illegible]	[illegible]
36⅛	27	Cray Research	[illegible]	[illegible]
53¼	28¾	Data General	[illegible]	[illegible]
49½	20½	Datapoint	[illegible]	[illegible]
23¾	17⅛	Dataproducts	[illegible]	[illegible]
87½	72½	Digital Equip	[illegible]	[illegible]
23¾	18⅞	Elec Data Sys	[illegible]	[illegible]
6½	3⅞	Gen Automation	[illegible]	[illegible]
38¾	28¼	Harris	[illegible]	[illegible]
43¾	36¾	Hewlett-Packard	[illegible]	[illegible]
78	63	Honeywell	[illegible]	[illegible]
32¼	20¾	Intel	[illegible]	[illegible]
64½	57	IBM	[illegible]	[illegible]
66	45½	Litton Ind	[illegible]	[illegible]
13¼	10	MDS (Mohawk D)	[illegible]	[illegible]
22	18	MSA (Mngmnt Sci)	[illegible]	[illegible]
15	10	Mngmnt Assist	[illegible]	[illegible]
6¾	6¼	Modular	[illegible]	[illegible]
63¾	50½	Motorola	[illegible]	[illegible]
24	16¼	National Semi	[illegible]	[illegible]
46¾	40½	NCR	[illegible]	[illegible]
28¾	19	Perkin-Elmer	[illegible]	[illegible]
23¾	17¼	Prime	[illegible]	[illegible]
36¾	28¼	Raytheon	[illegible]	[illegible]
28¼	20¾	Signal	[illegible]	[illegible]
34	27¼	Sperry Corp	[illegible]	[illegible]
34½	24½	Storage Tech	[illegible]	[illegible]
27½	23½	Tandem	[illegible]	[illegible]
35	25	Tandy	[illegible]	[illegible]
87	70¾	Texas Inst	[illegible]	[illegible]
27¼	18¼	Tymshare	[illegible]	[illegible]
35¾	27	Wang Lab B	[illegible]	[illegible]
9	7½	Wyly	[illegible]	[illegible]

Table shows the closing prices of The London Stock Exchange on Friday and [illegible] Thursday. The share index is based on the prices of the UK companies in the table. High and [illegible] have been adjusted where necessary.
** Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).*



UFO flying high with program generator sales

SCEPTICS who said that program generators would never catch on may soon be forced to eat their code, every laboriously-produced word of it.

Increasing use of productivity aids and program generators such as Filetab, Easytrieve, ACT, Elias and the rapid success of the most recently introduced, User Files Online (UFO) suggests that DP departments are finding it difficult to keep up with demand without such tools.

Training programmers is slow and expensive, partly because of the lead time in getting used to the system software before they become productive, particularly in something as complex as CICS, IBM's teleprocessing monitor. This is where UFO, the CICS program generator developed by the Oxford Software Corp in New Jersey, comes into its own.

"You can train people to use UFO in a fortnight," claims Paul Ingram, managing director of Coventry systems house Systems Resources which is handling the marketing of UFO in the North of England.

UFO runs as a CICS/VS transaction, supporting file structures and handling all I/O procedures on the user's behalf, including database access for DL/I, Total, IDMS and Adabas.

It is also a report generator with a facility for direct inquiry on files via the data dictionary, and will handle automatic screen handling.

First year sales targets for UFO have been exceeded by 20% by UK agents Fee and Systems Resources, who are now predicting a tripled user base by the end of the year.

"Initially it was very new and people were sceptical – no one wanted to be the first. It took us four months to get our first customer, Segas, to sign. Now they have over 2,000 terminals," commented Lilian Moshe, a director of Watford-based Fee, which is soon to open up in Australia and Singapore.

Sales are running at four a month for Fee, each customer having been given 30 days' free trial of the system which costs £11,500, and Oxford Software Corp recently collected an ICP award for sales worth $10 million. The number of installations has grown from 200 at the beginning of 1981 to 550, with users spread over 20 countries.

The newly released version, which combines 18 months' worth of user recommendations, will extend the system's potential by offering a real time data dictionary, online database extraction and reporting, automatic access DL/I and DMS conversion facilities.

INGRAM and MOSHE . . . Set to triple UFO user base this year.

Deal for F International

SOFTWARE house F International is to write an administration and accounting package for use in local authority direct labour organisations.

Under a contract awarded by Sperry Univac, F International will develop a suite of programs according to the specification commissioned by the Chartered Institute of Public Finance and Accountancy (CIPFA), which will run under OS/3 and OS1100 operating systems.

Pet package

FINANCIAL modelling package Finplan, developed by systems house PPM Computing for the ACT 800 series of microcomputers, is now available for the Commodore Pet range.

Ace order

THAMES Water Authority is to install the Ace Asset Control and Evaluation system developed by Package Programs, to run on Prime Computers in each of its seven divisions.

Q-Pac has gone online

AFTER 11 years on the market Q-Pac, one of the top selling payroll and personnel management packages, has finally gone online.

The Q-Pac company was bought up by Management Science America in August 1980, and MSA has done the conversion work. Sales manager Stuart Walsh says that there are two main reasons for enhancements, although he admits that the shortage of online software for IBM 4300 installations may have been a contributing factor.

"Firstly, all of MSA's systems are online, and most of the developments we see coming over the next few years will be in teleprocessing. Secondly, users are asking for payroll to be online more than any other system," he explained.

The new version will offer immediate access to the payroll and personnel database, within security limits imposed by management. A new screen design feature, Easyscreen, allows the user to present selected data in any chosen format without any programming effort or system modification.

Expected revenue worldwide from enhanced Q-Pac is put at $3 million by Walsh.

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GILB'S MYTHODOLOGY

High-level goals produce the best solutions

Tom Gilb is an independent consultant, lecturer and author on computing topics.

TOO many of our projects today are trying to make use of advanced methods to solve the wrong problem.

Let me give an example: A San Francisco bank client asked if I could suggest any dramatic programmer productivity techniques. They had 12 people, including six outside consultants, starting work on a retirement savings system.

The system it was to replace was currently working, as it had been for many years, at an outside service bureau.

In six months the current contract with the service bureau was due to expire. My client was sure that the bureau would use the opportunity to increase its price. And it intended to avoid the price increase by bringing the system "in house", programming it from scratch since the language used by the bureau was neither its property nor was it a familiar language.

The desperate situation, the project leader explained, was that even with 12 programmers the project could take one to three years.

No way was it going to be finished in six months. Any productivity ideas were quite welcome.

Instead of giving them a direct answer to this "wrong question", I did some lateral thinking. The method I used was identical to this First Principle of Infotecture.

I established that there was a higher level goal than increasing programmer productivity for the project. They agreed that it was "to avoid the expected cost increase in six months time when the contract expired".

On this basis I suggested that they immediately (while they could still bluff the bureau into thinking that they somehow could make their own system) renegotiate the contract.

They should ask for the same or lower price and a five-year extension. The threat, if this was not given, was a crash project to take over the application. The carrot, if it was given, was of course that the bureau would get some income from the bank for a longer period than they could otherwise expect.

When I came back five months later, the project leader excitedly told me what had happened.

One of the managers at the bank had paid a one-hour visit to the service bureau. He had walked out with a five-year contract at the old price!

The project leader, his team (minus the expensive outside consultants, now) then planned the takeover of the project on a long-term basis. We were not faced with the pressure of an impossible deadline, which would have caused them to produce a disaster.

The project leader made some interesting reflections which I'd like to share with you.

He said, "We had been thinking too much like programmers and too little of the bank's real interests. Someone should have thought more carefully about the higher level goals of the entire project. Nobody else in the bank was doing so. I will just have to take that responsibility in the future, even though my background is that I have been a programmer at heart."

He grew a lot that day, and with that experience. He also knew that looking for the higher level goals can lead to great simplifications in achieving a solution which both he, his team and his employer were happy with.

The act of looking for higher level goals is like the act of getting out of that dry well you have been digging, getting up in a geological survey plane, and looking for potential successful sites for boring your new wells.

The overview from high up increases the possibility that you will see the other solutions to your problem.

Tom Gilb

HUMAN TOUCH

Choice between open item and balance forward

Cliff Dilloway is an independent consultant specialising in accounting software, taxation and payroll.

MOST accounts payable and accounts receivable (purchase and sales ledger if you still use British English) applications packages offer the option of open item or balance forward methods of working. With the open item method of working individual invoices are maintained on file in detail until they are settled, while with the balance forward method, as its name implies, only the net amount is carried down from month to month.

Superficially the difference between the two methods is that with open item it is necessary for the payments to be identified against the invoices they settle. Rather more subtly payments in balance forward systems have to be identified against the month in which the invoices are due. This is because there is a requirement to produce an age analysis of the length of time the debts have been outstanding and a simple spreading backwards of the balance outstanding over the total amounts of invoices in past months is not satisfactory.

All this describes the systems analyst's view of what an accountant would call a personal ledger. The practical accounting requirement is rather different from a choice of operating a ledger as balance forward or open item. That choice needs to be exercised separately for each account. The reason is that most businesses have three categories of customers or suppliers.

The categories are: The two or three large companies with which the bulk of the business is done, the large group of businesses with which there is a moderate turnover of between two and ten invoices a month, and an indeterminate group which do business once every two or ten months or so.

With the indeterminate group it matters not whether their accounts are operated as open item or balance forward so they should be kept on a balance forward basis as that method requires a smaller input and operating overhead.

> **Keeping a large account straight is quite simply dependent on the co-operation, usually over the telephone, between responsible individuals at the supplier and customer ends**

Keeping a large account straight is quite simply dependent on the co-operation, usually over the telephone, between responsible individuals at the supplier and customer ends. Whether they wish to mark off paid invoices on a screen or on a listing is much more a matter of personal preference, amount of desk space available, the facilities at the other end and the type of accounts queries that they find arise.

There is no one systems solution, the users have to decide for themselves.

This leaves us with the quite large group of moderately active accounts. These accounts should always be operated on an open item basis. Goodwill and sound business arrangements are essential. Nothing is more disastrous than claiming for an unpaid invoice that is now two years old just because it has been overlooked.

The various categories of account that exist indicate that it is not the account level that the open item balance forward option needs to be exercised. Systems that do not offer the option at that level did not have much practical accounting experience built into their design.

Cliff Dilloway

FOCUS

DP training – growth industry of future

GOVERNMENT commitment policies have been emerging at a fast and furious Information Technology rate in recent months. Teletex, viewdata and cable TV appear to be well and truly committed – at least until next year when government funds and interest could run out.

Commitment policies, when not covering the development of marine viewdata systems for use on cross-channel ferries, involve new technology, software design and communication systems. Even the merest hint of a micro IT connection and the Minister for Information Technology will come running, keen to prove the government's generosity.

This generosity, however, seems to stop short of allocating bulk funds for the training of DP personnel.

Commitment extends to training only half of the industry's anticipated data processing staffing requirements over the next three years. Given an estimate that in this period there will be a requirement for more than 50,000 programmers and analysts alone, the industry will have to make a heavy training resource commitment of its own.

With a demand for engineers, systems designers, telecom specialists and presumably a supply of operators to keep the disc drives running and VDU screens loaded as well as full quotas of sales personnel, company DP training could become a growth industry.

At present, much of the industry training is undertaken by such major computer users as the large banks, the Civil Service, British Telecom and, to some extent, the computer manufacturers. Either those organisations will have to step up their recruitment levels, or computer user companies will have to implement some basic training courses of their own.

At this stage, private enterprise could take over and present to companies in need an industry teach-in covering the various types of existing government training schemes and facilities available.

Currently, the government market leader would seem to be the Manpower Services Commission.

Next in the training stakes comes the Computer Services Industry Training Council, or COSIT. Closely involved with the MSC is the well established but rather troubled Training Opportunities Programme, TOPS, and the rather less well-established Threshold Scheme which caters for school leavers.

The MSC is also associated with the Department of Industry which is setting up 30 IT centres to be known as "ITeC", designed to help unemployed youth to obtain work experience and training in new technology. The DoI hopes that private employers will come forward to sponsor these courses which aim to provide an introduction to computer programming, word processing, computer maintenance, digital techniques, control systems and electronics.

There should certainly be no lack of interest from potential employers – or existing DP personnel who could appreciate some basic training in the areas covered.

Alan Simpson

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DOWNTIME

Solved in a shattering instant

MANY are the things that Chad finds offensive – oppression, injustice, Rolf Harris records, and people who water down Malt Scotch.

But vying for distike of the decade along with these abominations is that most insidious of trinkets, the Rubik Cube.

Those who share my abhorrence of this plastic plaything will be glad to know that the noble computer has devised a solution to the pointless puzzle which takes a mere two-tenths of a second to complete.

The computer, at the University of Illinois, is linked to robot arms which manipulate the Cube through the 110 movements typically required to return it to its original state.

The mechanical devices unfortunately let the side down. They take up to 12 minutes to make the moves – somewhat slower than the appalling little creeps who regularly appear on television to demonstrate their skill.

My personal best time for solving the Cube is less than one microsecond – and involves the use of a very large hammer.

Consider your verdict

AN advertisement describing the Acorn Atom computer in kit form as "easy to build" recently caused a member of Her Majesty's public to take umbrage. He lodged a complaint with the Advertising Standards Authority (ASA) on the grounds that although a science graduate, he was unable to assemble the darned thing.

So poor old ASA had to decide what is meant by "simple to build". Simple to build by whom?

The complaint was not upheld, since expert advice sought by ASA deemed that the Atom was not difficult to assemble.

Fair enough. But let me quibble over one point. The Acorn Atom in kit form is not aimed at experts, whoever they may be. It is aimed at the home enthusiast, who may not be capable of wiring a plug.

Surely ASA should have consulted a jury of potential buyers on the matter, and have them retire with the offending kit to consider their verdicts.

I leave you with the question: To find out whether swimming is easy do you ask a fish or throw a baby into a pool?

For armchair sportsmen

THERE has always been a crushing conflict in my life between a desire to play games and a congenital idleness capable of keeping me bed-bound for days. Golf is one of the few sports that can be played to a reasonable standard without being able to touch a toe (and I can't even see mine for a garage of spare tyres).

There is just one problem. I suffer from acute agoraphobia which makes hell of the wide open links of a golf course.

As a result sporting activities are limited to darts, ping pong and pub polemic – that is, until the release of a computerised golf trainer by Mitsubishi.

Although available only in Japan, it will surely sweep the world for it promises to change the whole clean-shaven face of sport. It comes in a grey attache cass in which is a driving mat and a display screen.

You just tell the system which club you are using and swipe away. Magnetic sensors in the driving mat measure the angle and speed of the club at point of contact and full details of the shot appear on the screen. In this way it is possible to play a whole round.

Last resting place

IT is nice to know that not all defunct computers are destined for the scrap heap. The lucky ones find a permanent home in the Science Museum – and if luckier still they may even be restored to working order.

Such is the fate of an IBM 370/148, ten years ago one of the fastest and most powerful machines in the world, now condemned to the eternity of antiquity.

In fact so exhausting is the pace of our industry that there are even a couple of microcomputers on show and next year the museum plans to install a Research Machine 380Z for interactive display.

Pampered hacks

IN the beginning there was Computer-Aided Design (CAD). Then came Computer-Aided-Manufacturing (CAM), Computer-Aided-Engineering (CAE), and more recently Computer-Aided-Design-Manufacture And Test (CADMAT) with the prize going to the government in the most-cumbersome award category.

Now the latest rage is Computer-Aided-Pampering (CAP), spearheaded – you guessed it – by a public relations firm.

The firm in question has introduced the computerised human touch, if that is not a contradiction in terms. It runs a mailing list which contains well over 1,500 journalists in the UK and abroad, with their particular specialities such as business computers only, software only, company news only, and so on.

Up to 80 different search criteria can be entered including comments about the journalist's likes and dislikes – no product news, consumer-oriented material only and even "Hates fish" or "Likes Italian food" or "Vegetarian". This, says the company, will ensure that the journalist is well looked after with both food for thought and food as afterthought.

For the record, can I have my Chateaubriand well done please?

Chad

10 YEARS AGO

From Computer Weekly of April 20, 1972 . . .

HONEYWELL announced that it would start manufacture of the six models of the Series 6000 in Scotland at its Newhouse factory .....A decision to appoint a full-time secretary-general was on the agenda for the annual meeting of the Computer Services and Bureaux Association ..... Phase One of a £750,000 computer-based message switching system called MARS (Marconi Automated Relay System) to link the Meteorological Centre at Bracknell with other world centres, was completed by Marconi Communications Systems Ltd for the Ministry of Defence ..... In its largest sale to date to the Soviet Union, Honeywell was to supply a fleet 615 system worth about £1m.

ComputerWeekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, April 22, 1982

Japanese market must be a priority

CONGRATULATIONS to Micro Focus and BIS Software for winning Queen's Industry Awards a second year running. Last year Micro Focus was the first software company to win the Queen's Award for technological achievement, with BIS Software taking the export award.

Both awards this year are for export achievement and follow huge increases in overseas sales, particularly to Japan. Micro Focus now earns 10% of its overall turnover from sales to the Japanese, and BIS can claim almost as great a success in selling its Midas banking package there.

Other UK companies are gearing up to sell software in Japan. Compact Accounting has signed its first dealer there to sell Nucleus, written in Microsoft Fortran, which with projected first-year sales of £20,000. Another success is Software Ireland which is well advanced on a project to sell accounting packages through a Japanese company.

Both these deals resulted from the Information Technology Exhibition in Tokyo last November, organised by the London Chamber of Commerce after an initiative by CSA, the Computer Services Association.

Almost a year ago we suggested that efforts to sell software to the Japanese were a mess and we criticised the government for failing to give backing and guidance. Far from forcing us to eat our words, the success of some UK software companies reiterates our point, for their number can still be counted on the fingers of one hand.

There is need for greater effort on the part of the government and exporters to invade Japan with software. There is still a tendency there to regard importers as second-class citizens. An effort should thus be made to cement the kind of symbiotic relationships secured by ICL in its deal with Fujitsu to market the 380 mainframe in Europe.

The large Japanese market is sure to become more accessible as Japan realises that it faces economic ostracism unless the door to imports is opened wider.

Long-term relief for Magnuson?

UK users of Magnuson plug compatible computer systems can breathe a sigh of relief at the news that Memorex, one of the pioneers of the IBM plug compatible business, is to support and service Magnuson's user base in the UK. The relief, however, could be short-lived. Users will still face difficult decisions when the time comes for upgrading their systems.

In the US Magnuson has undergone considerable retrenchment and restructuring in an attempt to remain viable. All in all, the company looks much healthier than it did a month ago.

But the present crisis is not the first. Magnuson, set up in 1977 to offer low-end IBM compatible systems, was severely hit by the launch of the 4300 series in 1979. That time it was bailed out by Fairchild, which holds about 20% of Magnuson's shares. So what are the odds on Magnuson's long-term survival?

Despite the massive restructuring nothing can be assured. Magnuson competes at the low end of IBM's product range, where profit margins are very tight. Amdahl and National Advanced Systems both compete at the top end, where unit margins are much higher. But even at the top end there can be problems, as Amdahl has shown.

It should not be imagined that Memorex will hit the same problems which put Magnuson UK out of business. Memorex is in the top 15 computer companies in terms of sales world-wide. Servicing Magnuson systems in the UK will be an extremely small part of its business.

But the long-term future of Magnuson, and its users, is still shrouded in mystery at the moment. As Mike Kitching, managing director of Memorex UK, pointed out, the deal between Memorex and Magnuson was conducted at very short notice, the essence being to ensure continuity of service for Magnuson users. Much more will have to be done to secure their peace of mind for the future.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by D. E. Hirst of Slough, who wins £5. Computer tapes whirl at 93 miles an hour, keeping 96 million records on file.

Daily Mail

LETTERS

More independence for ops working flexitime

MY operations manager has brought to my attention the article in Op Spot (April 1) in which Andrew Thomas asked if anyone in operations worked flexitime. I have outlined below the arrangements at this installation.

Up until 12 months ago a conventional two-shift system was in operation from 8.00 to 22.30 with each shift manned by a shift leader and two operators working on an IBM 370/138. There was a small local and remote network of terminals and the CPU was heavily committed.

In April last year we moved to new offices with a new IBM 4341 model 1 CPU. We took the opportunity at that time to review the operations section.

Stage one of the review was to retain the two "shifts" but put the shift leaders on to flexitime. They would supervise all live work but allow our experienced operators to complete (eg) housekeeping and back-up work. At the same time the shift finish time came forward to 20.45.

In December last year the Model 1 CPU was upgraded to a Model Group 2 and stage two of the plan was implemented.

From a pool of six operations staff we devised the following structure:

One shift leader became technical services officer, who provides the operations input at development stage to new applications, ensures a standardised approach and handles the transitional stages between testing and live running of new applications.

A communications controller was also appointed (from within operations) to look after the now expanding local and remote networks (12 remote locations with 50 remote devices as well as 50 local devices). Both officers work flexitime covering 8.00 to 19.00 although in practice a 17.00 finish is the norm.

The other shift leader became operations supervisor responsible for all computer room activities in a day running from 8.00 to 19.00. Operators work a completely flexible system with start and finish times arranged between themselves and the operations supervisor.

This arrangement is for a trial period and subject to final ratification, but all the indications are that it will be successful. There are no problems in manning the machine room, there is no late working and the benefits gained by the operators include a better working relationship and better application to their job, as well as providing a service when users most want it – during the day.

R. WOLSTENHOLME
County treasurer
Northumberland County Council

FURTHER to your article on shifts and flexitime (CW, April 1), I used to work in an installation about four years ago, which ran on a proper flexitime basis.

It was a very small installation with a DPM, one programmer and one op. The machine was an IBM System 3 Model 10.

My present company has shifts which cover 7.30 to 21.30, with three operators covering these hours, shift hours being 7.30-15.30; 10.30-18.30; 13.30-21.30. We have recently had one of the first Prime 850 systems in the UK installed.

MARK BRADSHAW
Senior operator
Greenford
Middlesex

Adventures in Computerland

I HAVE encountered the same apparent dead ends in the game Adventure as your correspondent (CW, April 1), but on DEC equipment (a Fortran program under RSX-11/M). Program portability seems to be no problem when a games program is concerned, indeed there is too much standardisation – we programmers can never achieve our ultimate objective, namely bringing premature baldness to operators, if operators can swap notes on such obstacles freely.

I appeal to fellow systems programmers to follow my practice and heavily personalise games when converting them to new languages and machines.

A BIT-BASHER

ICL double chequing

FURTHER to the subject of cheque printing, and the letter from Mr Aston (CW, April 1), I am aware of the excellent work performed by Continuprint in the production of the National Giro Bank cheques (ICL now has systems installed into the NGB).

The reference to the IBM limitations was in context with the National Westminster Bank application. The ICL Laser Printing System prints two cheques up, including the stubs, across the web, the 3800 manages only one.

Perhaps Mr Aston and ICL should now do some talking. We may be able to double his throughput at no extra cost!

B. E. MILLS
Laser systems marketing manager
ICL

Liveware File by Don

DEVON AND CORNWALL CONSTABULARY DATABASE

The object of this project is to select and install a computer configuration that will form the basis of the Constabulary's Database needs. This will be the main storage and retrieval mechanism for the operational information used by the Force.

This development is part of a series of projects which will be interfaced via a network of data terminals some of which have been installed. The Force invites suppliers of suitable hardware and software for the central computer configuration to apply for further details which will indicate timescales and the broad system requirements from:

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OP SPOT

Traditional boundaries need to alter if the installation is to continue to run efficiently, says guest writer Brian Pugh

Why the operations manager must be given more authority

The TP monitor is the world's window on the machine room.

THAT noble volume, the Computer Users Year Book defines the main objective of the operations manager as: To direct and co-ordinate the work of computer operations staff in accordance with authorised plans and procedures, ensuring that the installation works efficiently and properly.

If he concentrates his effort solely on the first part of that statement it is doubtful if he will achieve the second part. Today, too many of the problems encountered in the operations area have their roots outside it.

This objective was relevant up to a few years ago when work was all or predominantly batch processed. Jobs submitted locally or remote were usually to agreed schedules and, because input volumes did not vary a great deal, turnround times were predictable even with a constantly variable mix across partitions. This made it easier to work to required deadlines.

If input was late or jobs aborted there was often sufficient leeway in the schedule to recover and still give the end user his output on time.

Operating systems were relatively uncomplicated and fairly robust but primarily concerned with resource sharing and CPU utilisation. Software problems were generally confined to application programs and their effect limited to one particular application. Even if this was a highly critical one there would be fallback procedures to alleviate the situation.

With this kind of environment the operations manager could concentrate on ensuring his staff knew their jobs, that work was scheduled and that procedures and standards manuals were available to cover every foreseeable eventuality. It would then follow that the installation was working efficiently and properly.

Today the picture is vastly different. Larger, more complex and often fragile operating systems absorb increasing amounts of machine resources. TP applications mushroom, causing unpredictable and unscheduled workloads which in turn can cause chronic degradation of the batch system. Online users are brought into the system without any clear idea of the service they can expect or that operations can provide.

Because of the extra load imposed by the operating and TP systems, design deficiencies in application programs become more apparent and more critical.

If this kind of situation is allowed to develop unchecked then it will reach a point where the operations manager will lose control. To prevent this his influence and authority must be extended beyond the traditional boundaries if the installation is to continue to function efficiently.

Currently the operating system consists of a basic system plus a spooling package with disc and tape management routines. These may be in an integrated system provided by the CPU vendor or they may be interfaced packages of which some will be from a software house. Added to these will be a TP monitor, conversational facilities for online programming, a couple of performance monitors and one or two tuning aids to improve the efficiency of some of the other components.

If these are run in a Virtual Machine environment then a number of these features may be repeated within other virtual machines.

Any one of these software components can and will bring the system down. As hardware has become increasingly reliable so software, due to its complexity, has become more error prone. Every time a new release is delivered it is followed by a stream of fixes.

Compared with four or five years ago, some operating systems take up a disproportionate amount of machine resources. If several virtual machines are generated then this proportion is increased and, because these machines can be logged on or off at random, it becomes difficult to determine how much capacity is available for production at any given time. Excessive use of logical mini-discs within physical volumes can extend access times and if exchangeable discs are used, make pack changing a nightmare for operators.

Another serious disadvantage of multiple virtual machines is that a user can bring the whole system down by trying to do things that his particular machine was not set up to cope with.

Because of the dominant position that operating software now occupies in an installation it is essential that the operations manager controls the size, complexity and features of his system and its associated packages. He must ensure it is geared towards production requirements and that its integrity is unquestionable.

Brian Pugh has extensive experience of computer operations, including a period as manager of a large installation.

In virtual environments he must control the number, size and logging on and off of every virtual machine. Preferably these should be scheduled. He must know the resource requirements and anticipated life of each log-on so these can be balanced against production commitments.

In an earlier series of articles on this page, Mike Ellis stated the case for an early operations involvement in system design and defined the role of the operations analyst. This is another area where traditionally operations have had no influence. In essence he is extending the management of change control from the immediate pre-implementation point to the design concept stage. This is as it should be.

More important is the need to assess, before the project is committed, the resources required, the response and turnround time the user expects. All too often the analyst ignores these factors in his desire to give the customer what he wants. The result can be a functionally correct system that is operationally impractical. This is especially true of online applications, particularly those that generate batch jobs which in themselves are job dependent.

Therefore involvement from the design stage is vital to prevent a commitment being made that operations cannot fulfil. When development is approved implementation must be controlled by strong change management action. This should ensure that every change to hardware and software, operating or application, is necessary, has been thoroughly tested and has adequate back-out and recovery in the event of failure.

The TP monitor is the world's window on the machine room. If any component fails and stops TP the user knows instantly. Often he will be the one to inform the operations manager. If the system is stable with very little change there should be no problems. But if it is complex and fragile coupled with many new applications and a growing user base then failure will be frequent and a lot of customer goodwill lost.

More of a problem is the effect a growing TP system has on batch processing. Most mainframes are still batch oriented machines so attempts to run batch and transaction processing concurrently results in software compromises which are not satisfactory for either. The interactive key appears to be response time which is achieved at the expense of turnround time.

Because of the increasing demands of an expanding network combined with larger operating systems it is not uncommon to find longer elapsed times for batch jobs run today as against five years ago even though the volumes are the same and the CPU is faster.

Then there is the problem of unscheduled batch jobs submitted via the interactive system. The first operations know about these is when they suddenly appear on a reader queue. There is no indication of required deadlines and they frequently occur when the machine is loaded with scheduled work.

If operations are involved when an online application is conceived or a new user is brought into the network then the limitations of existing resources can be made known and a level of service agreed within these limitations. Alternatively additional investment can be made to raise the level of service.

Service levels are increasingly talked about today, the need to provide the right level of service consistent with the requirements of the user. In spite of this many few in-house installations have formal service agreements with their users.

Failure to define to the user the level of service he can reasonably expect, together with his own responsibility for input, will result in his expectations always being higher than the service he receives. Without such agreements it is not possible to measure the overall performance of the operations department because its primary function is to provide a service.

The operations manager must be involved with the analyst in negotiating workable service agreements for each application and each individual user.

The necessity to become involved in areas previously thought to be outside operations must not be looked upon as interference. The control of change must not be considered as dictatorial. Early dialogue with new users must not be thought of as presumptuous.

All of these must occur if the operations department is to retain control of the operation and the data processing department is to retain its credibility.

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This is the 6th in the highly successful series of viewdata and videotex exhibitions sponsored by IPC Business Press, the world's largest business publishers. In the past these exhibitions have been successfully used in launching the latest adaptors and complete systems. These systems are the modern tools of the new era in Information Technology.

Don't miss out on this opportunity to make your company more efficient!

For tickets to Videotex Systems '82 Exhibition please:–

Fill out and return the form below.

Please send ..... tickets for Videotex Systems '82 Exhibition to:

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Run in parallel with VIDEOTEX SYSTEMS '82 CONFERENCE Cunard International Hotel, May 5-7

How to stay in business after a fire.

Do you realise that your company stands a better chance of surviving a fire in your factory than a fire in your office?

It sounds extraordinary but it's true. One of the most common causes of bankruptcy is the loss of company records by fire.

If a fire destroys such vital evidence as your account books, stock records, sales ledgers and customer lists (let alone specifications, plans and vital formulae) you will be in serious trouble.

It will take a very long time to substantiate your fire insurance claims.

You will find it almost impossible to collect money owing to you at the time of the fire.

And if you are relying on Consequential Loss Insurance to cover such trading losses, think again. To verify claims on these policies your insurers may well demand to see the very documents that went up in smoke.

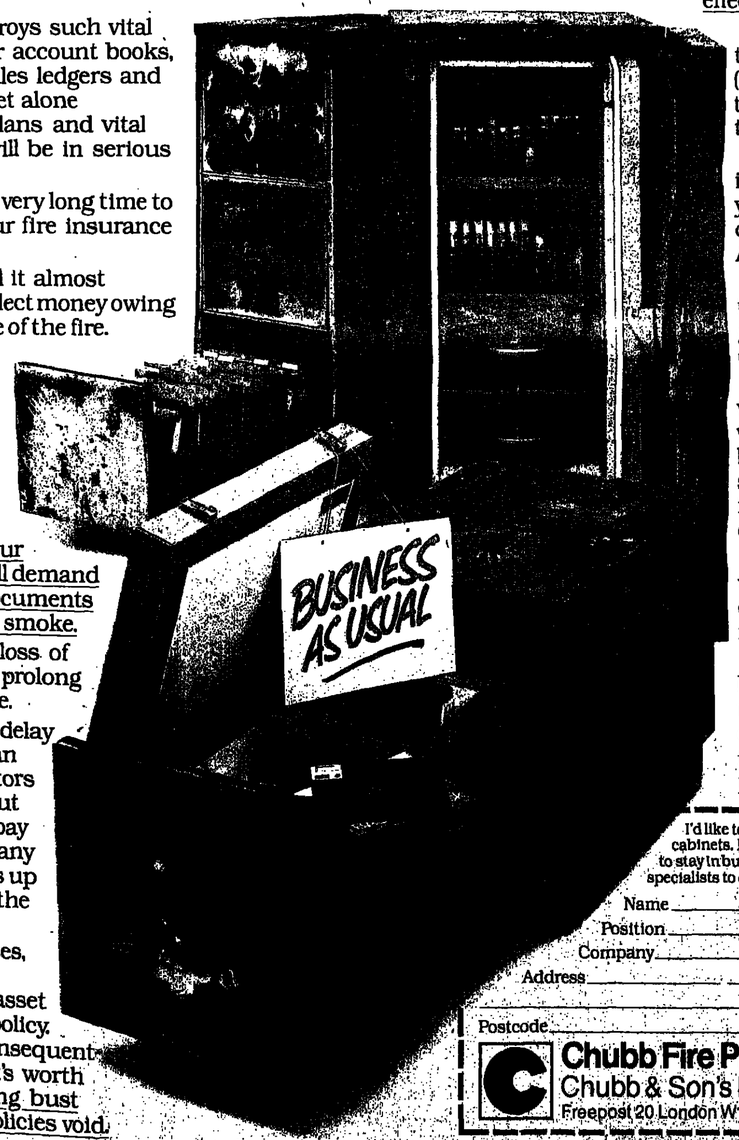
At best, the loss of your records will prolong the agony of a fire.

At worst, the delay in settlement can make your creditors so nervous about your ability to pay that your company eventually winds up in the hands of the receiver.

In many cases, by this time the company's only asset is an insurance policy. And if that's a Consequential Loss policy it's worth noting that going bust renders these policies void.

Whether you keep your company records on paper or computer media, the only way to protect yourself from a catastrophe like this is to make sure your records survive a fire.

The only way to do that, is to keep them in genuinely effective fire resistant cabinets.



They cost rather more than ordinary filing cabinets (which far from protecting their contents actually cook them like an oven).

But having decided to invest, you might as well buy yourself the peace of mind that comes with buying the best. And the best is called Chubb.

We would like to show you test results that prove how good our fire protection cabinets really are.

We'd like you to read letters we've received from customers who have managed to stay in business after disastrous fires – sometimes without any interruption at all – thanks to our cabinets.

We'd like to suggest, without obligation, what sort of protection your company needs.

If you would like the benefit of Chubb's advice on this little understood but devastating side effect of office fires, please complete and post the coupon below.

I'd like to know more about Chubb Fire Protection cabinets. Please send me your 12 page booklet 'How to stay in business after a fire' ☐ Please ask one of your specialists to call. ☐ Tick requirements

Name .....

Position .....

Company .....

Address .....

Postcode ..... Telephone CW/22/4/82

Chubb Fire Protection Equipment

Chubb & Son's Lock and Safe Co. Ltd., Freepost 20 London W1E 4YZ. Telephone: 01-637 2377

by Philip Hunter

SALARIES AT MARCH, 1982

	Median age	Lower decile	Lower quartile	Median	Upper quartile	Upper decile	Median increase	% median increase
Systems Manager	37	£9900 £9900	£11350 £11400	£12500 £12868	£14070 £14560	£16500 £16500	£1240 £1468	11.0 12.9
Senior Systems Analyst	33	£8226 £8550	£9000 £9100	£9862 £10000	£11000 £11157	£12150 £12443	£862 £729	9.6 7.9
Systems Analyst	28	£6300 £6300	£7000 £7080	£7500 £7762	£8500 £8500	£9500 £9850	£430 £500	6.1 6.9
Computer Operations Manager	35	£8250 £8292	£9315 £9350	£10325 £10728	£11750 £12000	£13050 £13080	£426 £688	4.3 6.9
Senior Programmer	28	£7000 £7250	£7500 £7640	£8448 £8500	£9000 £9240	£10000 £10036	£673 £590	8.7 7.5
Programmer	25	£4675 £4675	£5652 £5700	£6300 £6315	£7000 £7150	£7590 £7854	£300 £220	5.0 3.6

This table, showing salaries at March, 1982, uses medians, quartiles and deciles to give a flavour of salary distribution for each of the six groups mentioned. Ten per cent of each group earn less than the LD, lower decile figure, and 25% earn less than the quartile figure. The median splits them down the middle. The figures at the top of each box, in bold type, are basic salaries, while the lower figures include bonuses and overtime payments.

How well is a programmer paid?

PLAYING with statistics is fun, but in the wrong hands can be dangerous. Take a look at the table, taken from a salary report for March 1982, published by Reward Regional Surveys of Stone, Staffs.

The common programmer appears to fare rather badly. But the figures say more about use of words than about gross pay. The meaning of the word "programmer" is evolving fast, making it difficult for valid comparisons to be made.

Once upon a time a programmer was someone who filled in a coding sheet from a specification. Now the title is conferred loosely on anyone concerned with system development.

But the survey assumes once a programmer always a programmer. A static definition has to be applied, as Reward readily admits. "The job of programmer within a company is becoming much less important," says Reward executive Robert Couldrey. This, however, refers to the programmer in a data processing department of non-computer companies.

Forecasting fortunes —with element of risk

MOVEMENTS of the Stock Exchange are about as hard to predict as movements of cyclones, but we try regardless. The number of potential variables is enormous and the trick is in focusing on the salient ones — such as a hot tip.

Hot tips, however, often burn big holes in pockets and there is demand for cooler, studied reflection of the stock market resulting in reliable forecasts.

Enter the computer. A number of systems based on a terminal linked to a central computer are available from the likes of Datastream, BP-Scicon, and Burroughs. These are usually called something like Investment Research and Management System and offer stock market analysis and portfolio management.

A variation on this theme is provided by a five-person company called J. R. and S. Purdue, which has developed a system called Carisma. This provides forecasting facilities and a large historical database of share prices and accounting data which users can manipulate for their own programs as well.

Carisma consists of three subsystems: one for equities, one for gilts and one for portfolio management of a particular company.

The first two subsystems correspond to the two parts of the stock market: equities and gilts.

Equities are shares in companies, and provide a variable and somewhat insecure income. In other words they are high risk for the investor, but can provide access to a gold mine.

Gilts are effectively shares in the government, which issues them when it wants to borrow money. They can be cashed in any time at face value and provide a guaranteed fixed yield. They also fluctuate in value, but rarely do anything spectacular. Governments, after all, are large phlegmatic bodies and their financial fortunes are usually a weighted mean of everyone else's.

"Our system is based entirely on published information," explains Robin Purdue, joint founder of the company. This consists of currency rates, and balance sheets and share prices for 900 leading companies quoted on the Stock Exchange for the last ten years.

"We would put the retail price index on the database but you have to know what to do with the information before putting it in," says Purdue.

"I'm dubious about the way such information is collected," he continues, pointing out that there are several different indexes of inflation, each of which might be valid for a particular application.

"So we stick to information we are happy with," says Purdue. The programs in Carisma incorporate a risk factor based on simple probabilities in an attempt to rationalise the uncertainties of the stock market.

They feed on the rates of change of share prices over the preceding two years as they construct what mathematicians call a surface of probabilities for the next year.

The problem is to avoid being too inflexible and failing to cater for a company performing a U-turn.

It is impossible to allow for inside information of subjective validity, but it is, for example, possible to identify from market analysis where some companies are likely to be successful.

"Risk analysis is an enormous subject and we are only beginning to refine the concept of risk and bring it within the ambit of the database," says Purdue.

In a few months Purdue will have an equity switching program — useful for the person with redundancy money who wants to dabble in the stock market, but knows little about it, he says.

To coincide with this, Purdue will be launching a journal aimed at the naive investor, which he says will be something between the Financial Times and a tip sheet.

Carisma sits on twin DEC PDP 11s and anyone wanting to use it will need about £5,000 worth of terminal equipment. Hire of the systems will then cost about £9,000 a year, and tailored programs can be written on request.

PURDUE . . . "We stick to information we are happy with."

"I wondered when 'user-friendliness' would go out of fashion."

Friendly commands

MUCH column footage of advertising space has been filled with claims of end-user simplicity for query languages based on English commands.

But what people want is abbreviation in their own terms. They want to communicate with the computer in their own potted version of the English language — call it jargon if you like.

This is recognised by Ascot-based Travicom, which has written an operating system giving travel agents access to the booking systems of most major airlines. No attempt was made to supply English lookalike commands and instead there are the abbreviated codes travel agents are used to.

"We decided not to offer user friendly commands because most travel agents have trained staff to use the terminals," says Travicom managing director Eric Jarvis.

But what can be more user friendly than what the user wants?

PUZZLER

TWO
THREE
SEVEN
+
TWELVE+

As usual with these alphametics, each of the ten letters stands for a different digit from 0 to 9. See page 47 for this computer addition sum.

Announcing . . .

COMPEC SCOTLAND

. . . Scotland's own professional computer show.

The highly successful Compec exhibition of computers, systems, peripherals and software is to be held in Scotland for the first time this year.

Compec Scotland in Glasgow between September 7-9, 1982 will allow companies selling into this important market to focus on computer users throughout the country.

Surveys of visitors to computer exhibitions demonstrate that users prefer to attend a show which is local to them. Compec North was enthusiastically welcomed in Manchester last year, and has expanded for the 1982 event in June.

Now Compec Scotland with a venue in the centre of Glasgow ensures a place at the heart of another key market.

For information about exhibiting at Compec Scotland contact Chris Timmins, Executive Director, IPC Exhibitions on 01-643 8040 Ext 4869. Or clip the coupon.

Please send me details of exhibiting at Compec Scotland.

Name .....
Job title .....
Company .....
Address .....

Signed ..... Tel .....

Return to: Chris Timmins, Executive Director, IPC Exhibitions, Surrey House, Throwley Way, Sutton, Surrey SM1 4QQ.

£100,000 budget for your next computer? Make sure you check

MOMENTUM!

£100K may be your total budget, or that may be just for starters. Either way, it's a lot of money. To get the best out of that money, you'll add on-line terminals. And the more successful you are, the more terminals you'll add.

Be careful. As you grow, your organisation becomes more and more dependent on the computer. That's why you need . . .

MOMENTUM!

Why? Because MOMENTUM systems are resilient to failure. Hardware and software failures reduce to just a hiccup for the users. **And you can add resilience features as you need to, add MOMENTUM as you grow. No one else offers anything like it!**

But that's just the end of the story. For a start, MOMENTUM computers offer hardware and software ideally suited to high-performance on-line transaction processing. **Superb systems software and a full range of applications packages.** Systems handling 150 or more full-duplex conversational terminals. A communications architecture unsurpassed for handling multiple lines, multiple standards, multiple protocols.

And full support from a profitable, growing British computer manufacturer. So whether your budget is £50,000 or £500,000 get the facts. Post the coupon. Now.

Attention: Roger Fulton
☐ Please send a copy of your new MOMENTUM brochure.
☐ Please contact me for an appointment.
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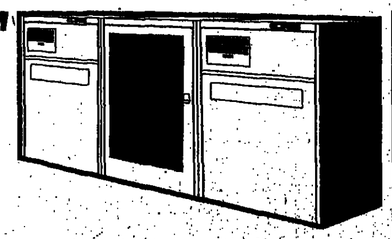
Company .....
Address .....
Telephone ..... Ext. .....
Computer Technology Ltd., Eaton Road, Hemel Hempstead, Herts. HP2 7LB.
Telephone: (0442) 3272. Telex: 825052

The Computers with MOMENTUM



CTL Computer Technology Limited

an ITL Information Technology Company

PEOPLE

Managing director for lawyers' software firm

LEEDS-based software house Law Data Systems has appointed Tony Rising managing director. Rising is a chartered accountant and until recently worked as a group financial controller for an international company in Lagos, Nigeria. Before that he was financial director of the Pennine Motor Group.

Law Data Systems was formed in 1976 by solicitors in private practice to market the debt collection package LDS Debtco, which they developed together. The company provides users of the system with support throughout the UK, and sites are now being developed in South Africa, Hong Kong and Malaysia.

The company has increased its staff from five to 20 and expects to quadruple its 1980 turnover by the end of this year.

■ **John Lord** has been appointed product manager for internal communications systems at Philips Business Systems' communication and control division. He joined Pye in 1965 as an apprentice engineer, transferring to Pye Business Communications (now the communication and control division of Philips) in 1970. Immediately before his promotion he was applications specialist for the DP 600 range of paging systems.

■ **Dr Martin Baker** has been appointed systems manager of Unicom News, the worldwide financial information service of United Press International and Commodity News Service. He previously worked with the Post Office and as a communications consultant with CAP.

■ **Tom Dugan** has been appointed marketing manager for AMI Microsystems' microprocessor/microcomputer department. He joins the company after eight years with National Semiconductor, where he was latterly microcomputer product manager.

■ **Roy Towndrow** has joined Baric Computing Services as sector manager, production. He was previously in charge of the Reading Systems Centre of ICL.

■ **Jim Kind** has been appointed UK sales manager, Convergent systems, at Computer technology. He joins the company after two years as sales and marketing manager with Datagraphix.

■ **John Wilson** becomes Computer Automation's first support consultant for its Irish sales office, based in Dublin. He was formerly with Irish Life Assurance and Unilever Services Ireland, as a project manager.

■ **David Newman** has joined Sanyo Marubeni as computer sales manager. Before joining the company he spent a year in high technology research, and was previously with Mascom as Southern divisional manager.

■ **Tony Parkinson** has been promoted to general manager of the Co-operative Wholesale Society computer group, following three years as the group's manager, retail services.

■ **Roy Clouddale** has been appointed national service field sales manager at Johnson Control Systems, and John Micklewright has been named international division sales manager.

■ **Eric Tomlinson** has been appointed product support manager at Direct (UK). He was formerly with Adds as an operating system support specialist, and has also been a field engineer for IBM and Burroughs.

■ **Stephen Partridge** has been appointed marketing manager of Standard Telephone and Cables' switching main exchange products division, based in North London. He was formerly contract administration manager of the division.

Humphrey Norrington of Barclays Bank (third from left) presents software trophies to winners of the University of Kent's national software competition, jointly sponsored by the bank. Entrants were asked to design and write a fully documented computer program which had a practical application. Roy Coote, 16, Alan Tombins, Dean Dennison and Michael Costin, all 17, from Robert Clack Comprehensive School in Dagenham, won the senior class of the competition with a program to assist an interior design company. Paul Clark, a 15-year-old from Truro School, won the junior class with a system for use in nurseries and gardening centres. Winners were awarded £1,000 worth of computer equipment for their school, £400 and a Kent Trophy, to be held for a year. Left to right: Prof Peter Brown (University of Kent), Paul Clark, Norrington and the Robert Clack School team.

Pioneer's award

THE IEEE Computer Society has given its first Computer Pioneer Award to Jeffrey Chuan Chu, president and chief executive of Sanders Technology Inc. Chu was singled out for his "outstanding early work" in electronic computer logic. The medal is to be awarded annually to individuals who have made distinctive contributions, at least 15 years earlier, to the development of computers.

Chu was a key member of the University of Pennsylvania team that built ENIAC, the original electronic computer, in 1943. He designed the first all-electronic arithmetic circuits for this computer.

He has been director of engineering at Sperry Univac, vice-president of engineering and vice-president of planning at Honeywell Information Systems.

DIARY

APRIL 27

Software engineering aspects of the SDL Gateway project, followed by AGM. BCS Software Engineering Group. BCS Headquarters, Mansfield Street, London. 10.30. Details Peter Wallis on (0225) 61244.

Installation visit to Percy Thomas Architects. BCS South Wales branch. 10 Cathedral Road, Cardiff. 7.00. Details R. Delamere on Cardiff 756053.

APRIL 28

PABX, speaker from Mitel. BCS Data Comms Specialist Group. BCS Headquarters, Mansfield Street, London. 6.00.

MAY 5

Computer privacy? Branch AGM, then debate. IDPM Central London branch. Altergo Software, Imperial House, 15-19 Kingsway, London. 6.30.

Japan the Golden – threat or promise? IDPM Sussex branch. Speaker Kevin Cahill, associate editor, Computer Weekly. British Caledonian Office, Gatwick Airport, Sussex. 7.00.

Presidential address and AGM. Speaker P. D. Hall, BCS president. BCS Manchester branch. NCC, Oxford Road, Manchester. 6.45.

AGM followed by computer-based information systems (videotapes). BCS Wolverhampton branch. Room C7, The Polytechnic, Wolverhampton. 7.00.

AGM. BCS Belfast branch. Drumkeen Hotel, Belfast, 8.00.

MAY 6

Microcomputer developments in the ILEA. BCS Central London branch. Charing Cross Hotel, The Strand, London. 6.00.

MAY 10-12

Seminar on Digital Research operating systems. Digital Research/Vector International. Brussels. Contact Vector, Belgium (010-32) 16202 496.

MAY 19

Ron Adam from British Telecom on the first year's experience running SwitchStream 1 packet switched service. BCS Data Comms Specialist Group. BCS Headquarters. 6.00. Details Peter Radford on 01-636 5440 ext 205.

CONFERENCES

■ MSA is to advocate the management control benefits to be gained from fully integrated computer systems for airlines at a conference to be held in Windsor between June 2 and 4. There will also be a discussion attempting to evaluate improvements that can be made to existing areas of automation. Main theme of the conference will be packaged computer software products to control, process and monitor airline financial information. This will be accompanied by a demonstration. Speakers will present papers on the economic outlook for the airline industry and the current and furture role of DP in airlines. Details on Maidenhead (0628) 71011.

■ THE third meeting of the BCPL User Group will be held at the University of Kent, Canterbury on July 12-13. The group provides a basis for the establishment of a standard for the BPCL language, and acts as a clearing house for information about the availability of compilers and other programs written in BPCL. Interested parties who cannot attend the meeting are asked to register details of any compilers, programs and so forth which they use, especially if they can be made available to others. Details from Bob Eager, Computer Laboratory, The University, Canterbury, Kent CT2 7NF. Tel: (0227) 66822 ext 7589.

When a computer goes down the last thing you want is a lengthy delay waiting for repairs. It simply wastes time and money.

With Digital's DECservice you won't believe how quickly we can get to you. As the world's No. 1 in minicomputers with a 16,000-strong service team throughout the world, nobody's better equipped to handle your problems with such speed, wherever you are.

For the majority of the UK and Eire we can have a service engineer on site within 4 hours (outlying areas within either 8 hours or 24 hours, depending upon location.

Once on site, repair efforts will continue uninterrupted until your system is fully operational again. Even if your system only consists of a Digital CPU with a different make of peripherals.

And to make the fastest service even faster, a simple telephone link with some systems can enable our engineers to begin to analyse the computer problem instantly by remote diagnosis.

But you get more than just speed with DECservice. Digital engineers make regular preventative maintenance visits and will make modifications or up-grades to your system, free of charge. (There are no hidden charges in a DECservice contract.)

Each service account is supervised by a service account representative ensuring personal attention.

And for a premium you can even have an engineer on call 24 hours a day, seven days a week.

For a free quotation on a DECservice contract cut out the coupon or fly down to your local Digital office.

And see for yourself what makes Digital's DECservice so super.

To: Jenny Keen, Digital Equipment Co. Ltd., P.O. Box 65, Imperial Way, Reading RG2 0TP.
I am interested in Digital's DECservice. Please contact me to provide a free maintenance contract quotation.

Name _____ CW 22/4
Position _____
Company _____
Address _____
_____
Phone _____

BOOKS

Period of social change to follow the gimmicks

The Mighty Micro (second edition). Christopher Evans. Victor Gollancz. £6.95. 255pp.

IT was fashionable in 1978 and 1979 when this book was being written to speculate in public about the future impact of computers on society. This was particularly true after the television programme Now The Chips Are Down made it the subject of widespread debate. This book was itself the basis of a television programme shown in late 1979 (just after Evans, who helped to make it, died of cancer).

The second edition is essentially the same book. Its relevance now lies in Evans' prediction that we are about to pass out of the period he characterises as being largely concerned with the gadgets and gimmicks at the sharp end of an immense commercial market, and into the one in which the most important social effects will take place.

It also remains a very broad treatment of the many factors relevant to the subject, described in the subtitle as The Impact of the Computer Revolution. Readers may find his factual material imprecise, but by not labouring any of the points he makes, he covers a lot of ground and by treating it lightly he makes it easy to digest.

Starting with the prehistory of computing in ancient discoveries about numbering systems, he works through the early development of machine capabilities. Blaise Pascal's adding machine, for example, was a commercial disaster in the 1640s despite its brilliance because of the relative cheapness of accountants and clerks.

Others contributed ideas and ingenuity to the field until just before the Second World War Konrad Zuse's Z1 was followed by the Bletchley Park team's Colossus and John Von Neumann's Edvac.

Evans' final thesis is that computers can eventually be developed into ultra-intelligent machines which will have intellectual capabilities greater than human beings. He leads into this proposition with a lengthy discussion on the nature of intelligence, before placing present day computers between tapeworms and earwigs.

Donald Kennett

One of IBM's mighty micros – a 64K RAM.

Selected by Maggie McLening

Packed with facts, but backup needed

Mastering Computers (Macmillan Master Series). G. G. L. Wright. Macmillan Press Ltd. £2.75.

THIS book does not explain computers to the layman, as its title may suggest to some. It is 220 pages packed with factual information, concisely presented.

The back cover indicates that it is suitable for O- and A-level, RSA, C&G, BEC and BEC/TEC qualifications, and that will probably turn out to be its best use, as it will need to be supplemented by lectures and tutoring.

A great area of subject matter is dealt with between its covers, all of it useful. Generally the information about computers is good and comprehensive. The information about software is less complete, but the chapters on programming are adequate, although there is nothing on system testing.

There is a useful chapter on organising a computer department, if one allows for the fact than an in-depth knowledge of control, control procedures and division of duties is not normally covered at this level.

There are some disconcerting variations in the depth to which different topics are treated. The information on VDUs is extremely detailed, and some of it quite technical, while at the same time the topics of key to disc, computer output to microfilm, file organisation and database are dealt with briefly.

Although NCC standards are mentioned, these are illustrated in a manner that does not accord with those standards. A few definitions, although not incorrect, are not presented in the way one would expect. Intelligent terminals are discussed but not defined.

The book ends with a look into the future which does little more than touch on concepts which have recently become almost established. Some of the comments surprised me: "subservient Japanese labour market", "ICL strongest domestic supplier in the Western world", and "steady growth of EFTS with all the clearing banks". A few errors in the index.

A useful, interesting and extensive book which will help students, despite its shortcomings.

A. J. Thomas

Many clear diagrams aid understanding

Digital Logic Design. B. Holdsworth. Butterworth, 1982. 338pp.

THIS book is aimed at students of electronics and electrical engineering, and at practising engineers who require a formal background in digital design techniques.

One's first impression is favourable – there are a great many diagrams and they are exceptionally clear. The book starts with a simple introduction relating Boolean operations to ordinary electrical switches, progressing rapidly to various theorems of Boolean algebra.

It proceeds to cover the theory of logic design (such as Karnaugh maps), followed by a description of various gates, followed by combinational logic. It describes logic of increasing complexity with discrete components, then discusses the use of MSI components, such as programmable logic arrays.

A useful chapter follows on the hazards of logic design, such as race conditions, explaining various hazards, how they can be detected and how eliminated. The main text concludes with a very brief introduction to microprocessors.

One particularly useful feature of the book is that the problems at the end of each chapter are accompanied by solutions.

On the whole, the book more than fulfils its objectives and can be recommended. It is available in both paperback and hardback editions.

Adrian Stokes
Director of computing, St Thomas's Hospital, London.

Hands-on user's companion

Programming Language Translation. R. E. Berry. Ellis Horwood. £15 (hardcover), £6.50 (paperback). 175pp.

THE approach taken by this author is reflected in the structure of his book. It is in two parts of roughly equal size. The second comprises detailed documentation and a listing of a modest compiler (the Pascal S compiler). This is preceded by a general discussion of compiling techniques with frequent cross-references into the description of the Pascal S compiler to provide illustrations of a particular case.

This form of organisation has much to commend it in that the generalities of the first part are frequently brought down to earth by making the student consult an actual compiler. But it also has the disadvantage that the author finds it necessary to be too brief in general discussions not directly applicable to the compiler that is literally to hand. A novice would find it hard to follow all the technical details mentioned in these general discussions.

Unhappily, too, the references given are somewhat thin on the ground.

For these reasons it is clearly beyond the scope of this book to serve as an all-embracing general introduction to compiling techniques. However, as a guide to someone with some knowledge of the basic idea who wishes to acquire a detailed understanding of a modern compiler, the book has points to commend it.

Peter Wallis
University of Bath.

Accessible text, useful to all

Macro Processors (2nd edition). A. J. Cole. Cambridge Computer Science Texts 4. £12.00. 254pp.

THIS text provides an excellent introduction to the subject of macro processors. The first edition was published in 1976 and this edition has some amendments and updating. A selective approach has been taken, and the basic principles behind the design of several macro processors are given.

The book would be eminently suitable as a first text for undergraduates, but it is also of interest to other computer practitioners, since many of the ideas presented have applications in other contexts.

Most of the book is easily accessible to anyone with a knowledge of high-level languages. The last two chapters, however, require an elementary knowledge of compiling techniques. It would also benefit the reader if he had access to or some prior experience of using a macro processor.

John Cookson
Edinburgh Regional Computing Centre.

A central purchasing policy is essential if an organisation uses large numbers of micromputers, argues Stan Meachin

Derek Field (left) and Gordon Cunningham . . . Centralising software development for local government.

Scattering a company's computer buying power can cost time and money

DURING the first flush of enthusiasm for computers, when mainframes were the order of the day, central control was absolute. With the introduction of the minicomputer it became economically feasible, at least for large companies, to instal them at many locations throughout the organisation.

Whether the benefits from this distributed processing approach were as great for the user as predicted is open to debate, but it is certain the trend will continue.

Thanks to the introduction of the microprocessor and the general reduction in hardware prices, more people within a given organisation control budgets which enable them to buy some sort of computer.

This dispersion of computer purchasing power can lead to major inefficiencies within a company. If machines are purchased from a large number of manufacturers then inevitably additional costs will be incurred. Although it is often argued that purchasing from several suppliers keeps them all on their toes by offering the carrot of more business, the case is far from clear-cut.

It may be, and often is the case, that special deals may be struck to obtain an existing client's new business when competition is fierce. This leads to the conclusion that the company has obtained the most favourable deal possible.

However, this policy neglects the hidden costs which result from running computer systems from a wide range of manufacturers. These include the maintenance of a variety of operating systems, coping with different applications programming languages (even if they all answer to the name Basic or Cobol), hardware maintenance agreements which must be negotiated with many different suppliers, and the inevitable additional problems arising from attempts to instigate some sort of communications network.

This increased workload must result in either longer delays before the user can begin to benefit from the computer installation, or alternatively, in the hiring of extra staff. The cost of either option soon makes any savings on direct hardware costs look quite insignificant.

Many companies have already decided that the purchase of computers, and particularly micros, must come under some form of central control. For example, according to recent reports, food manufacturer Heinz has instigated a procedure which requires that the purchase of any microcomputer must be authorised by the managing director.

This policy has been introduced to ensure that new systems are compatible with existing equipment, since the actual costs involved would not ordinarily require authorisation at such a high level.

A similar argument applies to buying software packages within an organisation. If company budgets allow many departments or branches to cost-justify and buy their own machines and buy what they feel are appropriate software packages, systems compatability is bound to suffer.

Already many organisations have found that computer systems have been installed together with a variety of software packages, that have not been authorised through the normal channels.

Rather than letting this go unchecked a company must consider the benefits to be achieved by the bulk purchase of software packages which can then be authorised for use throughout the whole organisation.

This type of centralised purchasing system can achieve many benefits. Firstly, there is the direct cost saving which can be made by buying several copies of the software at once. This saving incidentally becomes more significant as the purchasing organisation grows, because although most software is sold on the basis of an initial one-off price plus a reduced fee for each further copy, a company in the market for say 20 copies is in a powerful position to negotiate even more favourable terms.

Secondly, because everybody is using the same software there is a much freer exchange of information between users. Work that is undertaken in one department is both accessible and immediately comprehensible to members of another.

If anyone discovers a new technique or short-cut while using the system it can be circulated to all users. This transfer of information can also include useful sub-routines and macros which again helps to improve efficiency at each site.

Thirdly, staff training and education costs are kept to a minimum, since no matter where people work within the organisation, even if they move from department to department, they only ever have to work with the familiar standard packages.

Finally, only a small number of people need to be fully conversant with the more technical aspects of each package, so that if a user encouters a new problem or discovers some unexpected fault, competent help and advice from the appropriate technical centre is only a 'phone call away. As a result, time spent in correcting errors and trouble-shooting, when computer systems are non-productive, is reduced to a minimum.

Although the economies to be gained from the bulk purchase of software packages are enormous, there are several factors in an organisation which could militate

Most firms are discovering the virtues of central bulk microcomputer purchasing.

against this policy. Competition and internal politics between various departments, which is often to the detriment of the corporate body, can lead to the jealous guarding of their own autonomy.

This in turn makes them quick to criticise any centrally-supplied resource, including the provision of computers and software packages. Furthermore, if computer hardware and associated software packages are bought centrally, then each departmental budget will be cut by an equivalent amount.

Again, this can introduce feelings of dissatisfaction in the departments, since many managers have come to regard the size of their budget as a direct indication of the success of their career, something which is positively encouraged by virtually all suppliers of capital equipment.

Finally, to derive maximum benefit from a decision to buy software centrally the organisation must maintain an efficient internal communications system, otherwise many of the advantages will be dissipated.

Many government bodies have also developed successful systems to supervise the central purchase of software products. For

> **Competition and internal politics between various company departments can lead to the jealous guarding of their own autonomy**

example, the Software Provision Committee of the Universities Computer Board was formed to identify common areas of interest in the field of university computing.

Having identifed such an area the committee investigates various software packages on the market, selects the most appropriate system, and negotiates a bulk purchase on behalf of all the universities. After distributing copies of this software to every university it arranges a fault reporting system.

This procedure is designed to ensure that any queries are routed through a specialist at one of the universities, and are only passed on to the software supplier if necessary. The fact that the software supplier only has to support and maintain one site is a major factor in keeping the bulk purchase price low.

Another organisation which has recognised the need for centralisation is the Local Authorities Management Services and Computer Committee (Lamsac) which has seen the demand for applications boosted by microcomputers.

Over 200 mainframes and 2,000 micros are in use in local government and Lamsac recommends in a recent report that co-ordination of buying power, facilities and existing resources should take place as soon as possible.

Gordon Cunningham, head of the Lamsac project, explains that this will avoid re-inventing the wheel and reduce costs by sharing software internally. "It makes sense to co-operate," he said. "We can standardise on selection of software and negotiation with suppliers."

The Science & Engineering Research Council, SERC, has also instigated a policy of buying software packages and hardware centrally. SERC, which runs a network of 13 Prime systems and several GEC machines, most of which have been bought centrally, has found that the system works well.

Even the operating system of the Prime network is supported at one location with any modifications being distributed to the other sites by SERC.

● *The author is product manager for Microsoft at DM Partners.*

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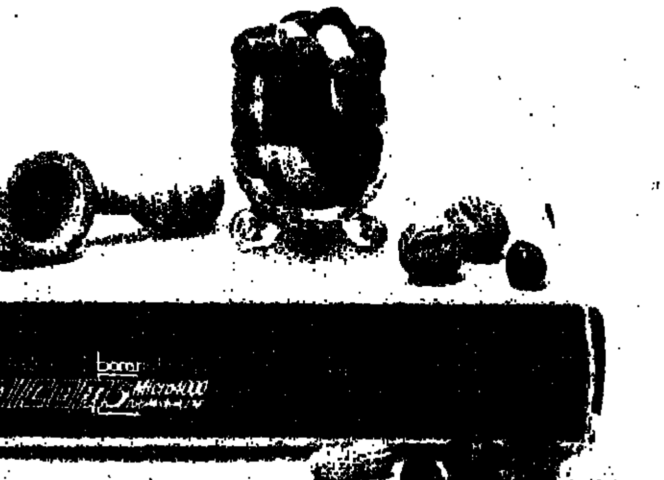

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PROGRAMME

0845 **Registration of delegates**
0915 **Opening remarks**
John Wakeham MP Parliamentary Under Secretary of State for Industry.
0930 **Chairman's remarks**
George Gilhespy, General Manager, Corporate Finance Division, Midland Bank plc
0945 **The Investment Fund Approach**
Gordon D Dean, Managing Director, Electra Risk Capital PLC.
1015 **Getting the Best Out of a Clearing Bank**
Colin Amies, Corporate Finance Director of Midland Bank plc
1045 **Coffee**
1115 **Developing and Financing Technological Innovation**
Geoff Taylor, Director and General Manager, Technical Development Capital Ltd.
1145 **Two successful case studies**
Michael Spencer, Managing Director, Deltest Ltd
Jim Philip, Managing Director, Xionics Ltd
1230 **Cocktails and lunch**
1400 **The role of the British Technology Group**
Minoo Randeria, Head of Information Technology and Electronics Group, British Technology Group.
1430 **How the Stock Exchange can help**
Peter Minton, Electronics Consultant, Laing & Cruickshank.
1500 **Department of Industry assistance and the MAP scheme.**
John Major, Electronic Applications Division, Department of Industry.
1530 **Tea**
1600 **Two successful case studies**
Duncan Fitzwilliam, Chairman, CASE Ltd. and Tony Ebel, Managing Director, Quest Automation Ltd.
1645 **Open forum panel discussion**
1730 **Summary and close** George Gilhespy.
1745 **Cocktail reception**
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System tailored to town planning specifications

A COMPUTER system to serve both the administrative and operational needs of a local authority planning department has been developed by Business Micro Systems.

The system provides facilities for the input and storage of planning applications. This information is made accessible to the user through a full range of inquiry programs.

All documents and standard letters relating to each planning application are generated automatically. The computer will merge the nominated text with the details of the relevant applications to produce the required documents. This may be achieved without any manual intervention.

The progress of each planning application is monitored so that planning officers have control over applications and the precise status of each application in the system can be found at any time, says Business Micro Systems.

The BMSL system is implemented on a Vector micro with a capacity of five Mbytes, or a 32-Mbyte Digico. Thus a considerable number of planning applications (20,000 or more) may be kept on line at any one time. This increases the speed of operation of the system as repetitive disc swapping is not necessary.

The processor will allow up to five workstations to be connected, each of which can be performing similar or different tasks simultaneously. The processor can itself be linked to other computers if required, e.g. ICL, IBM.

The full system including hardware, software, training and documentation is available from £3,950 per annum.

Business Micro Systems Ltd (CW), 10a Bellevue Way, Swansea SA1 1BY. Tel: (0792) 474106.

Micro runs low-cost daisywheel

THE TP-1 from Smith Corona is a 120 words per minute, microprocessor controlled daisywheel printer. It is suitable for use with word processing systems, microcomputers, small business systems or any environment which requires high quality printing, says its distributor, Discom.

The printer is available with either a parallel or a serial interface as standard, with an optional IEEE version for Pet users. It prints an 88 character Ascii set in either a 10cpi or 12cpi version, giving a 105 or 126 character line accordingly. Six typefaces are available for each pitch and the printer will handle single sheet or fanfold paper.

The TP-1 now brings the benefits of daisy wheel printers within the same price range as conventional dot matrix printers, says Discom.

The TP-1 will retail at £485 plus VAT.

Discom Trading Company (CW), Evesham, Worcs. Tel: (0386) 881962.

Data Type's Autograph workstation.

VDUs get hi-tech funding

AUTOGRAPH is the name of the graphics family products which are the first to emerge from Data Type as a result of its funding from Citicorp under its high technology scheme.

The range comprises five graphics display terminals: the Autograph 110, 112, 120, 125 and 150, costing from £1,250 for the 110, and two graphics printers, the Autograph 701 and 1000.

The VDUs all feature 512 x 250 dot matrix resolution. They incorporate a microprocessor to handle point plotting, vector generation and command decoding. The devices feature Tektronix 4010, 4012, and 4013 emulators.

Each Autograph display terminal can be linked to either the Autograph 701 or 1000 graphic printers to provide the user with a complete graphics workstation. This offers both display screen and hard copy output for graphics plus conventional alphanumerics.

Data Type (CW), Unit 213, Springvale Industrial Estate, Greenforge Way, Cwmbran, Gwent, Wales.

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software

First issue, May 1982

Contact Gordon Bradley: 01-661 3126

Disc drive for minis

THE computer systems division of Harris has announced a new 160-Mbyte Winchester disc drive, suitable for compact packaged systems.

Advantages of the Model 5350 drive include high reliability (8000+ hours MTBF, according to Harris).

The Model 5350 is designed for cabinet mounting in the packaged Harris 80 and 300 super-minicomputer systems, as well as in the peripheral cabinets for the Harris 100, 500 and 800.

A sealed module protects the entire recording environment from contaminants and provides a fixed head to media relationship which eliminates the need for head alignments.

It has four discs with five data surfaces. Average seek time is 30 milliseconds, and the I/O data rate is 1.2 Mbytes per second. With 680 tracks per inch, the Model 5350 has a formatted capacity of 144 Mbytes.

The product range includes drives from 40 Mbytes up to 675 Mbytes. Price of the Model 5350 is £19,527.

Harris Systems Ltd (CW), 145 Farnham Road, Slough, Berks. Tel: (0753) 34666.

Editing terminal

THE Beehive DM5 terminal from TDS features an 8085 microprocessor which services both the detached keyboard and the display logic. This in turn controls the 12in P42 green phosphor screen.

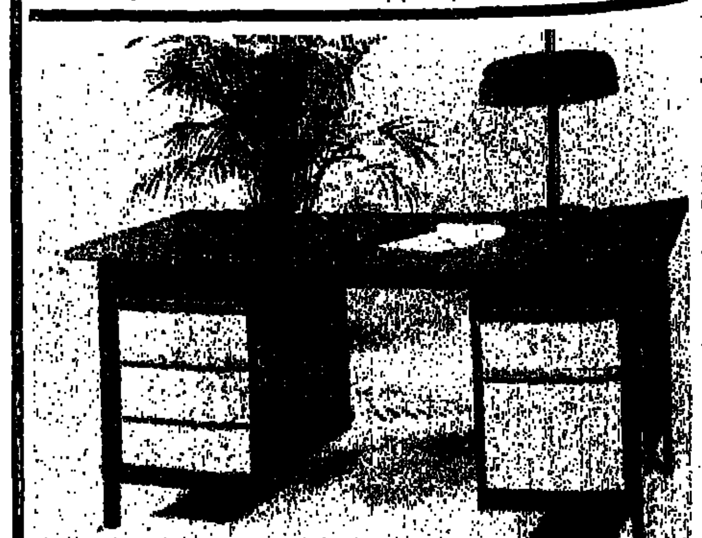
The full Ascii keyboard is IBM sculptured with a stepped design. An extendable connector enables the keyboard to be used at a distance away from the screen making it more comfortable to operate.

Features include the ability to edit the screen contents such as Insert/Delete – both character and line, as well as a full complement of cursor controls and scrolling capabilities. Transmission can occur by character or block and the unit provides a line drawing facility.

Additional features include a programmable status line, a time of day clock, and a memory lock which enables the display area above the cursor position to be "frozen" on the screen. Communications are via an RS232 interface.

End user price is £649.

Terminal Display Systems Limited (CW), Philips Road, Whitebirk Industrial Estate, Blackburn, Lancs BB1 5TH. Tel: (0254) 676921.



Desk components system

THE Triumph desk range is a components system which offers a variety of desks, tables and workstations for the office. The range of colour finishes enables many combinations to be chosen to blend with the decor and enhance the office.

The desk is available in three heights: 76cm, 68cm, and 40cm, in brown, grey, white or cream. Worktops are encased in melamine which can be replaced by PVC if required. Several wood finishes, as well as white and dark brown, are available.

TBS South Wales Ltd (CW), Triumph Works, Merthyr Tydfil, Mid-Glamorgan CF48 1YH. Tel: Merthyr (0685) 4041.

Memories combine cartridge and Winchester features

EIGHT-INCH disc drive computer memories combining features of 3330 cartridge technology with those previously associated with Winchester drives, have been developed in England by Vermont Research.

The 800 Series has a microprocessor controlled embedded servo track finding and following system, used in both the new 11 and 22 Mbyte disc drives.

The ESP (Embedded Servo Positioning) technique was first developed and patented by Vermont and was used on the company's 5000 Series, 14-inch cartridge drives during the last three years.

Two models are announced. The 8010 is a rigid disc drive which stores 11 Mbytes on an Ansi standard eight inch removable cartridge. The 8520 is a combined cartridge and fixed disc drive, which, on a single spindle "one-over-one" configuration, doubles the capacity to 22 Mbytes within the same 7 × 15 × 8½-inch cabinet.

Utilising 3330 type non-contact start/stop cartridge technology, the read/write heads fly at 30 micro-inches permanently. Unlike Winchester drives, the heads never touch the media, even during shipment.

However, all the principal advantages associated with Winchester technology have been incorporated in the new disc drives, says the company. These include closed-loop recirculatory air filtration and brushless dc direct drive motors with electronic braking, for accuracy, low power consumption and quiet running.

The drives have faster cartridge changes (purge time under 15 seconds) and high tolerance to shock and vibration (suitable for mobile applications).

Priced from about £1,600, the model 8010 8in, 11 Mbyte removeable cartridge disc drive will be available for deliveries during the first quarter of this year.

Vermont Research (CW), Cleeve Road, Leatherhead, Surrey. Tel: (03723) 76221.

Catalogue tells what's in store

THE Abacus System – the Force in Electronic Component Distribution, is the title of a 152-page catalogue produced by Abacus Electronics PLC. It contains details of all stock components held at the company's franchise division in Newbury, together with manufacturers' current list prices.

Technical details have been included with ordering details of manufacturers' products including semiconductors, microprocessors and computer boards, connectors of all types including IDCs, and a range of instruments.

Manufacturers whose products are listed in the catalogue include National Semiconductor, SGS Ltd, and 3M's Scotchflex.

Abacus Electronics PLC (CW), Kennet House, Pembroke Road, Newbury, Berks, RG13 1BX. Tel: (0635) 83311.

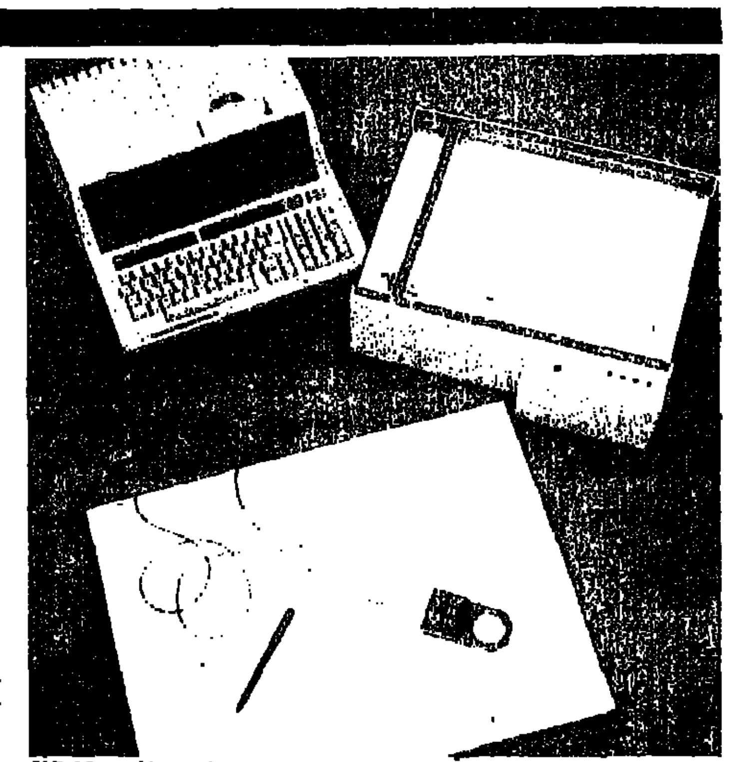
Versatile approach to graphics

SINTROM has introduced a hardware package to meet the needs of the graphics system user.

Consisting of a digitiser, HP-85 and Houston Hiplot Plotter, the system provides a versatile approach to the graphics workstation concept.

The digitiser has been designed for industrial applications requiring the conversion of graphic data into digital form for recording, computer processing or interactive display. It provides a resolution of 0.001 inch with an accuracy of ±0.005 inch.

A crystal controlled electromagnetic ranging technique used in conjunction with a free-movement cursor allows digitising on materials up to one inch thick. The accuracy of electromagnetic ranging is unaffected by pencil lines, ink, temperature, humidity or other environmental factors. Stylus and pushbutton crosswire cursors are interchangeable.



HP-85 graphics workstation from Sintrom.

The HP-85 consists of a processor, keyboard, video display, printer, mass storage and operating system, packed into a single unit no larger than an electric typewriter.

It features extended Basic, alphanumeric/graphics display, thermal printer, 210 Kbyte built in cartridge and full keyboard and numeric pad.

The basic package of A3 digitiser, HP-85 computer and A3 plotter, is priced at £5,750. It is also available with HP 9826 or 9845 computers.

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berks.

LSI family interface

A VIDEO display interface from Computer Technology for the DEC LSI-11 family is available from Data Translation. Called the VRQ-11, the unit is a companion product to the VRU-11 interface for the Unibus computers. The VRQ-11 provides direct interface between any Q-Bus machine and a CRT monitor.

It gives the user direct random access to all character positions on the CRT screen. Semiconductor memory contained on the circuit card appears to operating software as full speed read/write main memory.

Split screen displays, combined interactive and background formats, and other synergistic enhancements are possible.

The format of the display produced by the VRQ-11 is software programmable. Display operating parameters such as the number of lines and number of characters per line are changed by executing a few machine instructions.

Data Translation (CW), 430 Bath Road, Slough, Berks SL1 6BB. Tel: Burnham (06286) 3412.

Printer uses telex roll

A PORTABLE matrix printer, the Facit 4520, which prints on standard telex roll paper and sells at £583 plus VAT is available from Hi-Tek. The company sees uses for it with small business systems, educational computing, personal computers and data loggers.

The Facit 4520 is a self-contained unit measuring 370 × 152 × 350mm and weighing 9.5kg. A floating suspension construction and an acoustically damped housing combine to give a noise level of less than 60dB(A), and a microprocessor control system ensures that each line is printed using the minimum carriage transport distance.

Hi-Tek Distribution (CW), Trafalgar Way, Bar Hill, Cambridge CB3 8SQ.

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A prejudice against the use of technology is needed to counteract pressure from suppliers, says Nigel Harrison

Where the blame lies for failure of office system developments

ALTHOUGH there is little disagreement on the potential impact of office systems, most organisations which have implemented them cannot claim much success – contrary to the claims of many suppliers of office technology products.

Indeed, many users have regarded their early office systems developments as little short of total failures. Systems which have been seen as successful have mostly been those performing lower-level, clerical or secretarial tasks. Even these may be seen as successful only by the responsible managers, and not by the users themselves.

Driven by rapid advances of technology and its even more rapidly decreasing costs, suppliers are forced to generate new markets for their products. They have used their sales and marketing skills to place considerable pressure on potential users to accept their new office technology products, often without prior justification.

Several cases have been documented in which either the system cost more than planned, its planned benefits have not been achieved or it has simply failed to provide the expected functions.

However, it is too obvious to place all the blame on the suppliers. Several other factors are responsible, and many of these are more important.

There has been too much emphasis on the technology itself, rather than on how to use it. This is exemplified by the approach of some practitioners (and by most suppliers) who only approach a particular problem with a particular technological solution in mind. This "solution looking for a problem" approach is all too common.

The alternative and preferred approach is to fit technology to identified solutions. Clearly, one should bear technology in mind when analysing requirements in a particular circumstance. However, it is most important to distinguish between this and fitting user requirements to the products.

Most of the existing office systems implementations have concentrated on automating the simple office tasks performed by lower-level clerical and secretarial staff. The common use of word processors is an example. Although the word processor has an important role to play in new office systems, that role will not simply be as a means of automating the typing task.

Statistics have shown that these lower-level office tasks represent only a small proportion of the functions and costs of a typical office (typing, for example, may represent no more than 2% of total office costs).

Instead, office systems should place more emphasis on higher-level procedures, typically carried out by groups of workers, by professional staff and by managers. We need to improve the effectiveness of these staff, by providing them with systems to assist them in their work.

Another common cause of failure is the difficulty of identifying, assessing and quantifying the potential benefits of office systems. Often, if a hard, money-based business case for these systems cannot be found, the systems are not accepted.

There is little doubt, however, that the real problem is the inability to distinguish between benefits which cannot be quantified and non-monetary benefits. Most so-called "unquantifiable" benefits are, in fact, not difficult to quantify – it is just that they are difficult to quantify in money terms.

Yet another constraining factor has been the lack of analysts with the appropriate skills. Most commentators have been aware of the problem as it relates to the requirement for data processing staff. The need for office systems analysts is just as pressing – and the necessary skills are more complex and wide ranging.

As office systems become more functionally-specific, aimed at particular applications, the requirement for packaged or custom-built applications software will become greater.

Two approaches have been suggested for easing this situation – firstly, there are those who favour a move towards so-called "programmer-less software development" – that is, the development of the software by the users using high-level languages.

Others favour training the existing data processing analysts and programmers to handle office systems development work. Neither of these approaches, however, shows any sign at present of coping with the problem.

It is becoming accepted that far too much concentration has been put on the use of utility products. Some workers have said in the past that, by its very nature, an office system should be developed to deal with unstructured work. The argument runs that, since this unstructured work is generalised across functional boundaries, the only useful office systems products are those generalised, utility products (such as word processors) that cross functional boundaries.

It is now clear that this argument is fundamentally false. Although office systems should make use of these generalised, utility products, the systems which provide the most benefit to the users are on the contrary the functionally-specific, applications-oriented systems which deal with the requirements in particular functional areas.

This is not to say, of course, that word processors and other utility products will not be used in office systems – simply that more thought will have to be given to integrating them into applications.

The last factor causing the relative lack of success of early office systems developments has been the lack of a suitable general methodology for the development of the systems. This factor has been, arguably, of more influence than any others.

A methodology is needed to provide a logical framework for the development process. Without this framework, many of the problems mentioned above are difficult to avoid.

The methodology should adopt a staged approach, like those which have proved most successful in developing data processing systems, but should also be iterative in nature.

Several other general principles should be followed in developing such a methodology. Firstly, a functional approach should be adopted – that is, office systems should be developed which enhance the overall effectiveness of business functions.

By contrast, most existing implementations of office technology concentrate solely on the automation of the low-level office tasks.

Secondly, office technology should be viewed as only a single component of the work system that is the office. An office system consists of many elements apart from the technology (people, for example), and all the elements must be developed together to achieve success. This systems perspective is the only way of addressing the performance of the business functions of an organisation.

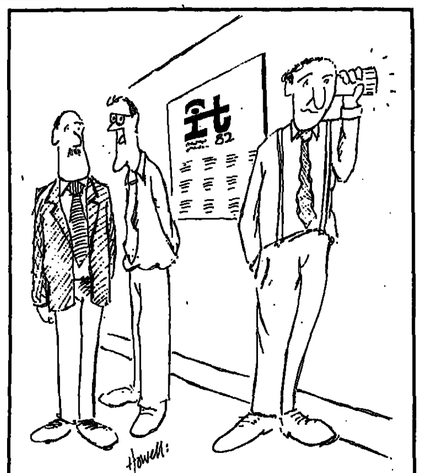
Thirdly, the use of technology should only be considered when other components of the office system have been identified. This deliberate prejudice against the use of technology seems to be necessary to counteract the pressure from the suppliers and others to see all office problems as particular applications of their products.

This approach is in complete contrast to that promoted by many practitioners, who only search for problems with particular technological solutions in mind.

Lastly, it is important to consider the whole of the life-cycle of the new system. Because office systems have to be seen as consisting of many interacting elements, they are difficult to modify once installed. Plans must be made for the lifetime of the system right from the start.

Despite all the problems, it is clear that office systems have a major role to play in improving the effectiveness of our businesses. Large gains remain to be made, and recent economic trends, both in the cost of technology and in the cost of labour, have increased the potential benefits.

● *The author is a director of System Concepts, a consultancy specialising in office systems.*



"He's something of a traditionalist when it comes to information technology."

Five-stage strategy for automating the office

THERE are five stages of a successful development methodology for automating the office:

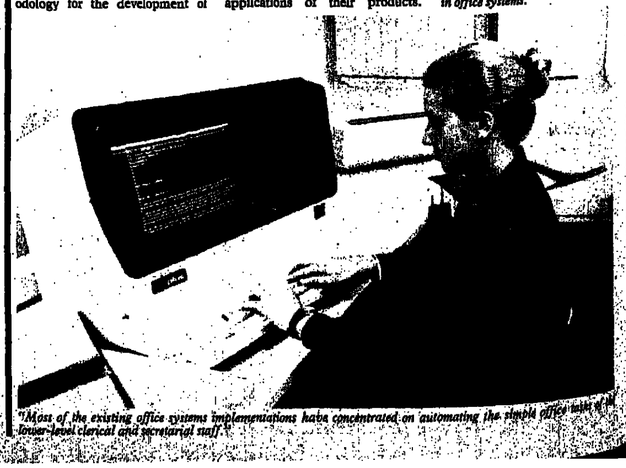
1. – Opportunity search. This is concerned with a top-down analysis of the organisation to identify the areas in which the existing office systems could best be enhanced.

2. – Analysis. This stage consists of an analysis of a particular business function, to prescribe the facilities that must be provided within the new office system. A decomposition of the functions of the business unit should be performed, and the requirements of this model of the unit described in terms of its requirements for office systems.

3. – Design. During this stage, it should be determined how the facilities of the office system are to be provided. This may involve the determination of which technology will be utilised. It is important not to make these choices until this stage.

4. – Construction. This stage has the objective of building or amending the components of the new office system.

5. – Implementation. It is vital not to overlook the importance of this stage. The amount of training and hands-on experience needed by users of office technology is much higher than that typically provided for computer systems. And office technology needs to be introduced much more carefully than the equivalent computer system, primarily because office technology augments rather than replaces existing business procedures.



"Most of the existing office systems implementations have concentrated on automating the simple office tasks of lower-level clerical and secretarial staff."

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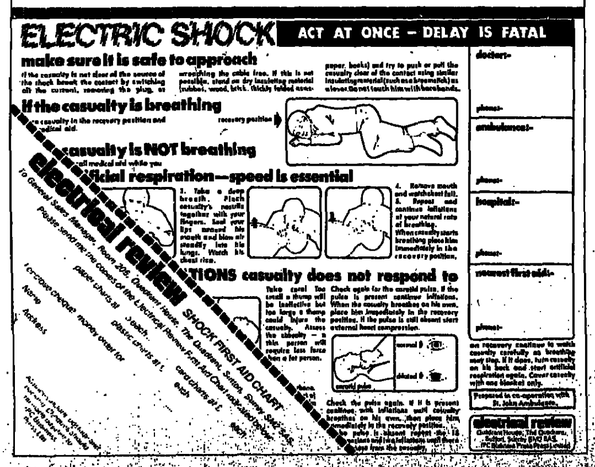

ELECTRIC SHOCK ACT AT ONCE – DELAY IS FATAL

make sure it is safe to approach

If the casualty is breathing

casualty is NOT breathing

Artificial respiration—speed is essential

electrical review

ACTIONS casualty does not respond to

SHOCK FIRST AID CHART

doctor

police

ambulance

hospital

nearest first aid

Nine steps to cope with advancing technology are outlined by Alex Atkinson

Circles of influence that surround the annual DP plan

ONE of the cornerstones of DP management is the annual data processing plan. It is a complicated structure which constantly changes direction under the influence of pressures on the DP department.

To simplify its development, it can be thought of as a series of separate steps or circles of influence.

Foremost is the need to formalise the DP department's objectives and service goals. The objectives and basic conditions may be prepared by data processing personnel, but should be reviewed and approved by top management as well as key users. The objectives generally include goals for meeting users' needs and goals for development of DP resources.

The second step is to define the basic conditions that will exist while the objectives and service goals are being accomplished. These assumptions are crucial to the success of any DP plan. Areas to be monitored include long-range missions and short-range objectives of the organisation, current DP processing and staffing resources, state of DP technology, and DP projects involving outside organisations. These assumptions are often tracked monthly to determine if changes to the DP plan should be made.

The third step in the annual DP planning process is to define the format and content of the DP plan. This should begin with a review of your organisation's overall management plan. However, the format of plans can be a very personal thing. Acceptance of a plan's format by others will greatly affect their acceptance of the plans contained. A review of final planning documents with management, key users, and others who will use them helps ensure this acceptance.

The fourth step is to determine the current status of all DP projects in process. An analysis of the workload included can reveal current projects that are not as badly needed as others you have not started. Some projects may no longer be desired by users – at least in their planned form. Dollar and personnel-level estimates should be collected for each project. The responsible user, expected benefits, and estimates of payback period (if any) should also be determined. The result will be an inventory of DP project workload for the next year.

The fifth step is to inventory user needs over the planning period. This can best be done in several steps. First, users are individually interviewed and their needs are formalised. Then, the collected needs are reviewed by all users together to fix priorities that are fair to all. The following information should be established for each project: Project identification; relative importance of the project; responsibility assignment for the project; workload estimates; basic assumptions that can affect the project; project beginning and ending dates.

Bar charts with calendar indices and milestones provide a useful way to document resulting project schedules.

The sixth step is to prepare estimates of needed DP resources for the planning period. This will include equipment, software, processing services, and personnel. The resulting resource plans are closely related to the project plans, with each affecting the other. The result is a list of known projects and corresponding requirement statements for needed hardware, software, outside processing, telecommunications facilities, type of people resources, and the like. These resource requirements must then be translated into dollars for the DP budget over the planning period.

An estimate of processing workloads over the planning period is another output of this step. While estimated resource requirements are never totally accurate, experience should permit refinement to within 75 to 90% accuracy.

Seventh, the manpower resources and requirements generated should be translated into DP personnel plans that include recruiting and training for needed skill levels. The more complex environments of database, data communications, distributed processing (with higher-level languages required by them) put tremendous pressures on the skills of most DP staffs. Thus, the training plan is a crucial component of any DP plan today.

Eighth, ways must be established for tracking plans and reporting progress to management and users. DP plans that are not reviewed regularly can lose credibility among users for whom they were initiated. However, even plans borne out of scepticism among the most hardened users can become accepted management tools if they are regularly reviewed, updated, and prove to be reasonable descriptions of how things actually are working.

The ninth and final step in the annual DP planning process is to prepare a formal document describing the plan and obtain its approval by key management and key users. The objective here is to gain formal recognition and approval of your plan and ensure that all who must interact with the plan know what their responsibilities are. If users aren't explicitly told how to react to a planning document covering their functional areas, they may not do so simply as a matter of protocol. What must be done at this point is to convince top management and users that the annual DP plan is *their* plan too.

Once the plan has been approved, it should be given the same importance and attention as the organisation's other formal plans.

Once the annual DP plan is developed, continual monitoring and modification are required to refine it and to reflect unexpected events. Basic assumptions of the foundation of the plan's estimates will change. New opportunities will arise and pre-empt planned projects. Some existing projects will become less attractive, or will change in nature as a result of clarified design, and cost/benefit implications.

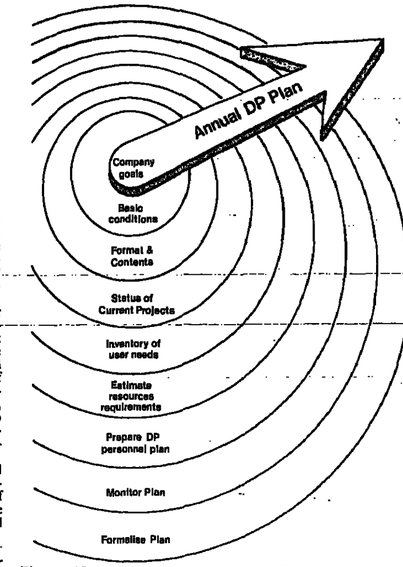
Each month the DP manager should review the basic conditions, resource usage schedules and project schedules. Report on their status should be made to users at regular DP/user meetings. Their status can also be summarised in writing quarterly.

The planning process described here should be repeated each year, with the end of the planning cycle coinciding with the beginning of the next budgeting process. Establishment of a formal annual planning cycle for the DP function ensures that major DP needs are systematically identified and formalised and that the annual DP plan is adequately refined so it remains useful throughout the year.

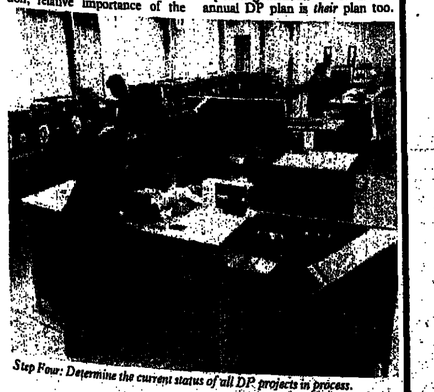
The biggest challenge ahead for today's DP management is the advancing levels of technology. Yet the gap is widening between the number of skilled DP personnel needed and those available. Part of the solution will come through improvements in hardware, software, and processing sevices. Other help will come from a renewed emphasis on training for greater productivity.

But essential to it all is an annual DP plan that guides the DP function through the changing scene of the Eighties by striking a balance between the services needed and the resources available.

Alex Anderson is managing director of Informatics UK.



The annual DP plan is directed by nine circles of influence.



Step Four: Determine the current status of all DP projects in process.

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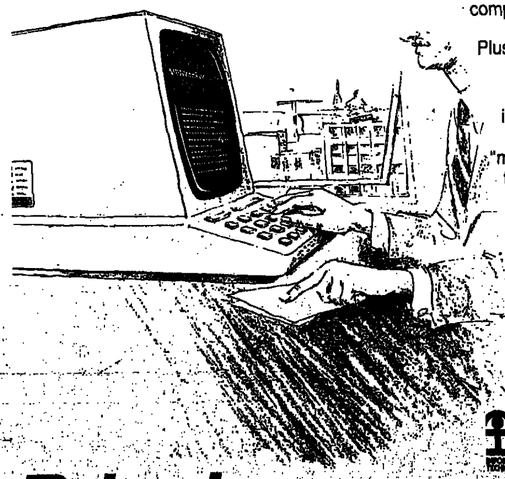

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Bringing computers to everyday life

SOFTWARE MONTH

Database management systems fulfil early promise

DATABASE is one of those terms which has been used to cover everything from filing cabinets to the most advanced relational data dictionaries.

All the information which forms the everyday business of a company is its "database" in one sense, be it telephone numbers scrawled over pieces of paper, or a fully computerised system with a set of database tools.

At one time, individual applications used their own data – sometimes the same information was used elsewhere in the company but in a different "shape".

As computerisation spread, this proved increasingly time-consuming and large firms in particular turned to the database as the answer to all ills. In fact it proved to be something of a troublemaker for some people, forcing the data into unnatural structures and becoming confusingly complex.

The main trouble is that even with a comparatively flexible database, the state of a company's data rarely stands still.

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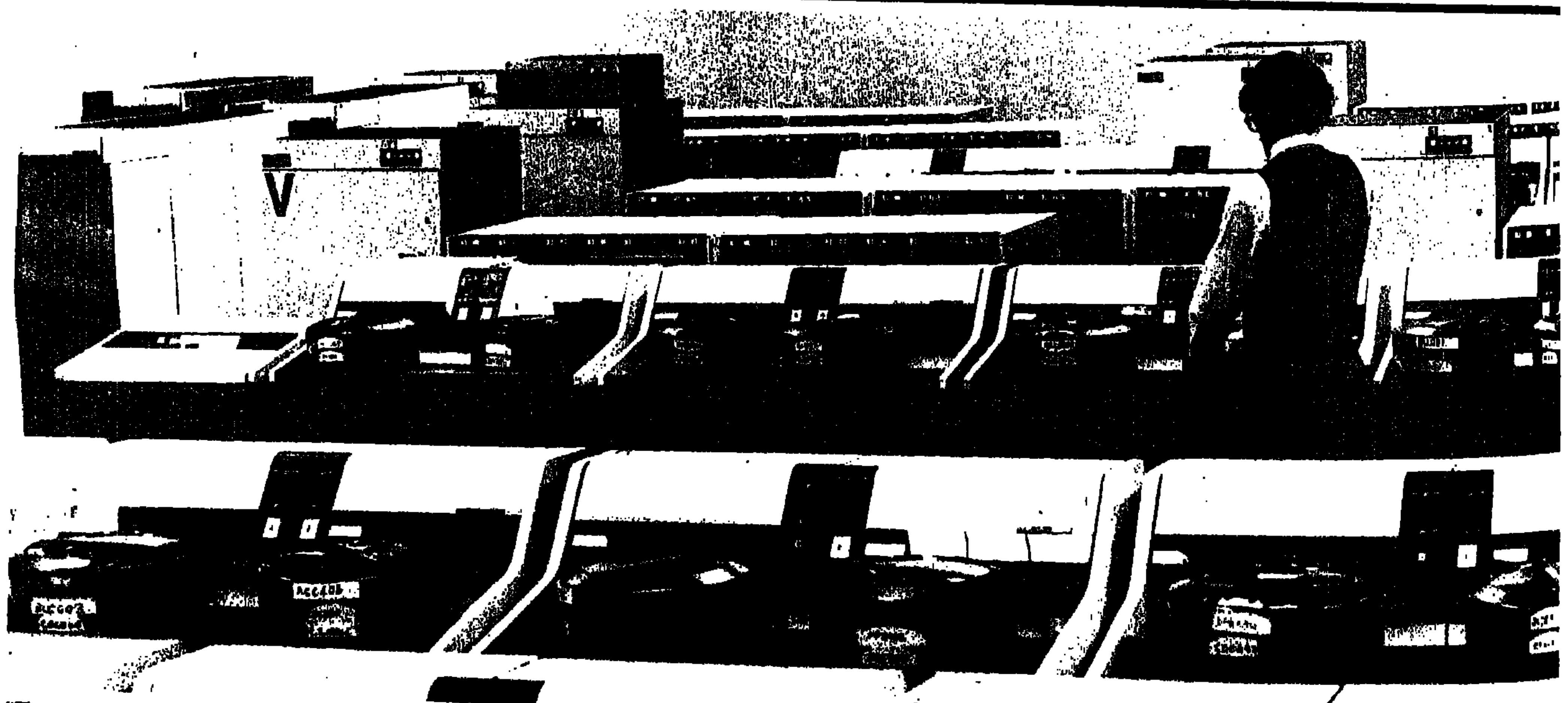
The strict hierarchical structures of the late Sixties and early Seventies were not famous for performance. This became more of a problem as the need for new applications mushroomed, and was aggravated still further by the anxiety of end users to get their hands on their own data.

The fact that this trend itself was viewed as a problem rather than the way things ought to progress indicates just how removed from the actual business of their company some data processing shops can be.

The end user revolution has pushed DBMS technology further towards solving user problems.

This issue of Software Month looks beneath the surface of database management, looking at the issues to be considered when buying a DBMS, and at trends such as relational database, distributed database, database machines and data dictionaries – developments which look set to make the database do the job it was always promising to do.



"The computer manager's role as an active information manager will change to a more custodial one."

Mistakes tend to be lasting and expensive–so get it right

Selecting a DBMS needs careful planning and research, says *Matthew May*

THE MOST often repeated piece of advice about selecting a database management system (DBMS) is, as the child in the baked bean advertisements was frequently reminded, Get It Right. Mistakes tend to be both long term and expensive and push the important phase of product comparison into second place behind the question of whether a DBMS is the right solution at all.

For a start, the terms DBMS and DMS (data management system) are used loosely, causing confusion among the uninitiated. One definition is that a DBMS is a system that stores and manages data in a structure geared to providing retrieval for a multitude of different applications.

A DMS, according to this philosophy, is primarily aimed at permitting access and retrieval from already existing files, usually for a single application. But a DMS can grow to a size where it begins to display the characteristics of a DBMS while small "starter" versions of a DBMS are available that begin with little more than the facilities of a DMS.

So far so good, but consider the advice of a study on databases made in 1980 by the European Commission. First step, it says, is to appoint a database administrator when contemplating the implementation of a database.

Then go for a data dictionary system (DDS). The last move recommended was to choose a particular database and management system. Though critical of the range of facilities available on current DDSs it predicted rapid improvements and great potential.

For those who haven't come across their own tales of database implementation it should be pointed out that there is a general impression that few European companies have successfully and smoothly implemented a true DBMS, by which is meant a system that has a single set of files accessible by all the application programs a company uses.

Those that have been implemented without too much shedding of blood are almost exclusively in the insurance world. The NCC has made disparaging comments about the dramatic claims made by suppliers for the success of the database approach.

Advantages that have been cited for a DBMS include the reduction of development and maintenance costs, the easier access to information and the ability to satisfy urgent and unpredictable requirements. Most open to argument are the cost effectiveness claims and the concept of requiring only one set of files – even companies considered well advanced in DBMSs frequently have to maintain several databases.

For those who have accepted suppliers' claims too easily and purchased the wrong system the advice from the US Datapro Research Corp is to "have the guts and good sense to admit it before the effort has gone too far". Once committed to a DBMS environment it becomes progressively more difficult and expensive to change systems.

Purchasers of a DBMS can easily find themselves as locked into their DBMS supplier as their computer manufacturer. Yet the users of DBMSs do not seem to consider software portability. But, given a healthy dose of cynicism in the selection stage as a crucial factor when setting out on database selection, there can be immense attraction in systems that avoid wasteful duplication of information and allow managers of different departments to share and use the same information in different ways.

Database systems can provide new ways for managers to look at corporate data – the most typical example being the ability to play "what if?" games using any corporate data to assess marketing strategies etc.

For a more optimistic view of the value of database systems it is necessary to look across the Atlantic where almost 10% of all companies using computers have database management systems.

Further growth though, it is argued, is still hampered by the amount of computer time and power required by a sophisticated DBMS. But, like other areas of information technology, predictions of mass usage are made based on the continuing fall in the cost of computer memory and power.

If, as Cincom Systems claims, the end of the decade sees 90% of computer users with advanced database systems then it has important implications for the role of the data processing manager and his department. Instead of being an active information middleman the computer manager will have a more custodial role. It will also require more formalisation in deciding which managers should be allowed access to what information.

The fact that there are important knock on effects from widespread use of a DBMS has led consultants Peat, Marwick & Mitchell to comment that the problems of information management are 90% management and only 10% technical.

Suppliers of database systems have now come to realise that the reputation for implementation could be better. Cullinane in particular is pushing to change this image. "Successful databases are achievable within reasonable timescales, at an economic cost and without trauma," said managing director Vic Morris.

The cynical reply to that by those who consider they have had their fingers burnt is that database implementation is an exercise which consumes resources in great quantities and certainly more than expected or budgeted for.

Even worse for the image of database systems are those who feel they have spent tens of hundreds of thousands of pounds for a conversion to a DBMS system that does what it did before, only in a different way.

Others claim that the greatest success comes from having a data dictionary in careful use, arguing that the use of such a dictionary determines more about the case of application programming than the use of a database system alone. Yet another view was expressed earlier by John Bowrage of Price Waterhouse at a Xephon conference. His analysis was that as far as the end users are concerned, the DBMS will disappear as its facilities are absorbed within the operating systems of machines.

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Selecting and implementing a DBMS

● From page 24

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A Price Waterhouse survey of 12 IBM installations with a DBMS concluded there were three factors for successful implementation: the use of a data dictionary, the establishment of database design standards and a thorough, well structured approach to testing.

But the development of applications under a DBMS was found to take 20 to 30% more effort than with conventional methods. Bowrage also criticised those companies who take a piecemeal approach when introducing a DBMS by starting with non-strategic applications, such as personnel records, on the assumption that if it does not work, in future more important applications are dropped.

This approach, says Bowrage, is the worst of both worlds as the package is still using the resources of the computer system.

> **Only nine of the 12 participants in the survey felt that installing a DBMS was the right decision**

Only nine of the 12 participants in the survey were generally convinced that installing a DBMS had been the right decision.

Despite cautionary tales, organisations are starting to believe that they can learn by the mistakes of others, and a DBMS can be a significant advantage if both eyes are kept clearly open in the planning stages. In the US in particular, database systems are in demand and the companies providing them look set for a healthy future. Real improvements are being made in performance, the friendliness of languages and in the power of data dictionaries.

So what, in simple terms, should a DBMS be? Essentially it is an extra software interface between the application programs and the accesses to the physically stored data. This means the application programs should be able to be coded as though they view the data in apparently different structures from the actual physical one so removing the need for sorting, merging or sequential file processing.

The DBMS package is usually sold as general purpose solution, partly because it can be suitable for many applications but also because given its size and cost few would buy it for specific applications. The following obvious but still sometimes overlooked features should be available on any DBMS if it is to be of maximum value:

● First, all information within relevant subject areas should be storable – of course you say, but some systems have been purchased where parts of the required data which were described as "a small problem" by the salesman have proved practically impossible to store in the desired fashion.

● Secondly, each application should be able to be programmed as though only the kinds of data that it needs are present.

● Finally, if major upheaval is to be avoided when change is required then new applications and new types of data must be able to be added without disturbing the coding or operation of existing applications.

There is, without doubt, a strong demand for effective DBMSs stimulated largely by a sense of frustration among the management in some companies who are aware that while the basic data of the organisation is stored within the computer, existing systems do not allow access or extrapolation from that basic data.

Though at first sight there appear to be many DBMSs on the market to choose from, a significant proportion have a bias towards particular applications and regardless of what the salesman says are not suitable for this purpose. Add to this the number of machine dependent systems and the choice soon narrows for the installation tied to one mainframe manufacturer.

Within the DBMS area several relational databases are coming on the market. The idea behind this is that the end user sees the data as being stored in logical relations or tables giving advantages in simplicity and ease of implementation especially for report generation and ad hoc enquiries.

But, as Bowrage pointed out, relational databases are unlikely to be of practical significance to the commercial mainframe installation for some years both because of the large amounts of CPU power and system resource required and substantial investments made in existing systems.

Current DBMSs can be viewed as having five principal approaches in Adabas, Codasyl, IMS, System 2000 and Total. With the exception of Adabas the concept of recognising and defining relationships between record types is the same. Adabas, however, relies on defining one or more indexes to each file.

The precise details of the relationship approach for the other four are quite different. Codasyl has no limit on the number of relationships in which a record type may be involved or on the number of levels allowed in a structure.

IMS and System 2000, however, are restricted to multilevel hierarchical structures while Total allows each "member" record to have any number of "owners" though the network structure is limited to two levels, i.e. records can only be members or owners.

Restrictions of the various approaches can be partially overcome by using various tricks though suppliers tend to exaggerate the ease and scope with which these can be used.

Database techniques have now been available for many years and though development still continues and the benefits become greater, it is clear that these benefits are frequently not easily achieved and careful planning and investigation is vital to ensure that organisations get it right.

BOWRAGE . . . The DBMS will be absorbed into the operating system.

ROUND UP

PEARCE . . . First UK Ada programmer.

SOME recent events in the software industry you may have missed:

■ After years of waiting, the first application written in the US military language Ada has been put on show by CAP in Reading. The program is used to control a robot arm performing simple manipulative tasks. Sara Pearce, reckoned to be the first full-time British Ada programmer, describes Ada as "not easy to learn".

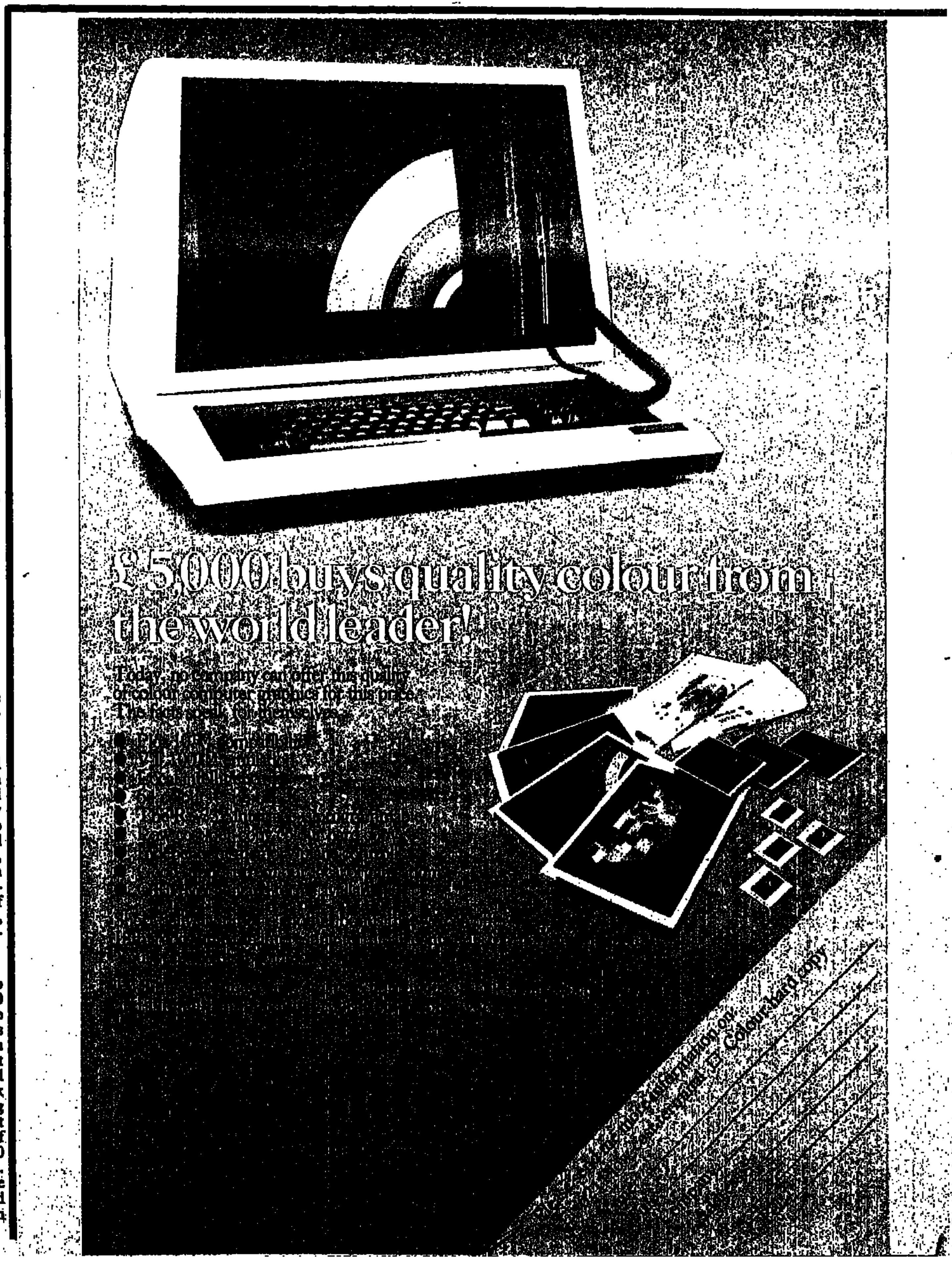
■ Getting in on the program generator act, Southampton-based Logical Computing has launched its rival to The Last One, The Next One. The Next One is considerably cheaper than its precursor, costing a mere £50 including documentation and support.

■ The Pearl program generator, one of the first code-writing tools for microcomputers, has been relaunched in the UK by Pearl International as an end user product running on any CP/M machine. Known as Personal Pearl, the package first made its appearance when Terodec launched the product and then dropped it, tired of waiting for the finished product. However, according to Tony Frowd of the newly-formed Pearl UK, "it was worth waiting for".

■ A 16-bit microcomputer version of Logica's database management system Rapport is being planned to augment the cut-down 8-bit CP/M version already available. The new release is expected to have all the original mini and mainframe features, including the interactive query language interrogation system.

■ Pay rises for programming and systems look set to be in the region of 7% to 8% this year, compared with 9% to 10% in 1981. A survey carried out by the NCC also showed that the average site had 6% fewer analysts than required, 8% fewer programmers, and an 11% shortage of analyst/programmers. With less than a third of sites using trainee programmers, the NCC sees the situation worsening over the next five years.

■ ICL managing director Robb Wilmot has had the VME 2900 operating system vetted by two teams of independent consultants who found that, far from being an embarrassing liability, the product has great potential. Wilmot stated that it is ICL's intention to stick with VME as its prime operating regime well into the 1990s. Wilmot said he intends to make the most of the operating system and the £100 million spent on its development. "VME has arrived," he said. "We now have a secure, open-ended and flexible operating system which is also highly efficient."



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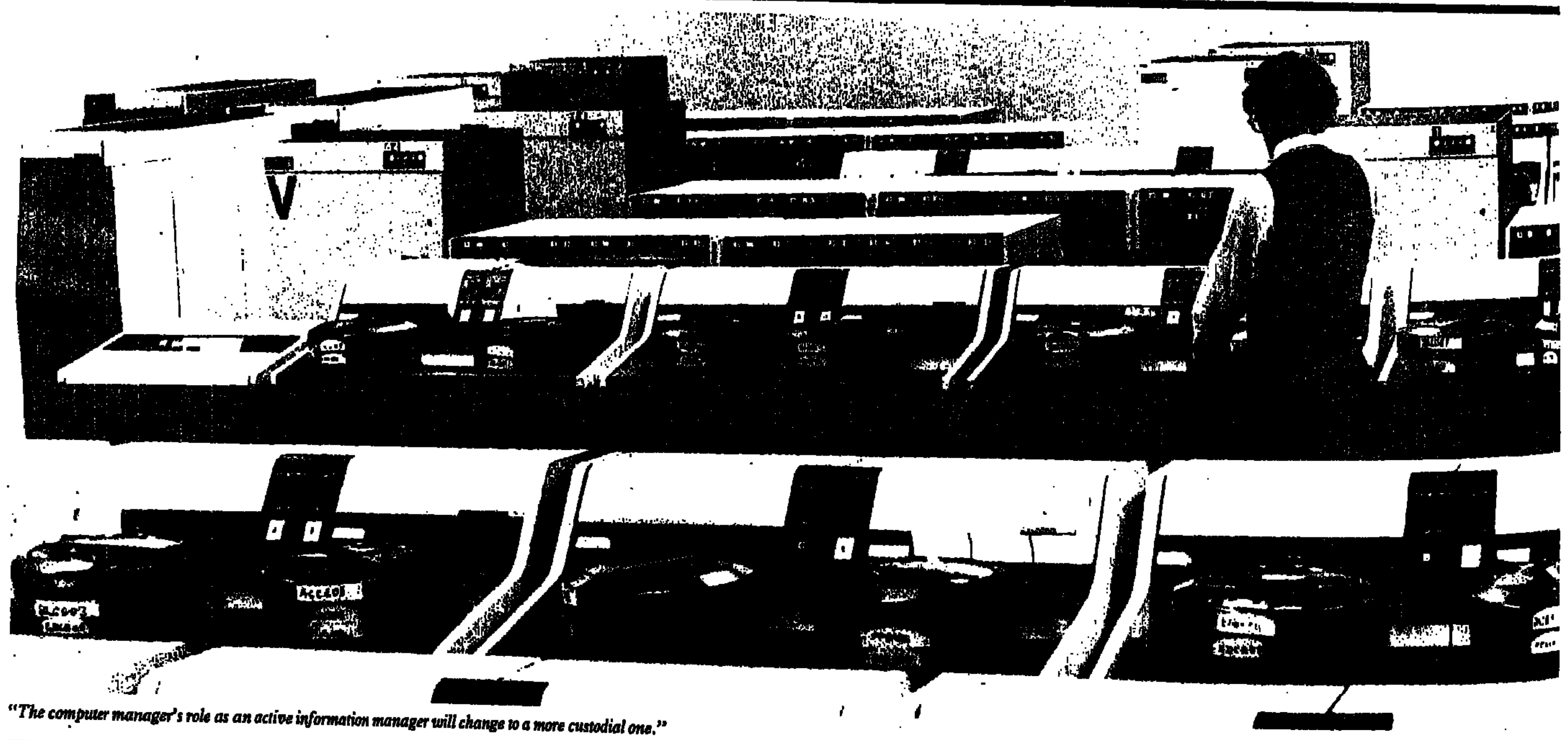

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A Price Waterhouse survey of 12 IBM installations with a DBMS concluded there were three factors for successful implementation: the use of a data dictionary, the establishment of database design standards and a thorough, well structured approach to testing.

But the development of applications under a DBMS was found to take 20 to 30% more effort than with conventional methods. Bowrage also criticised those companies who take a piecemeal approach when introducing a DBMS by starting with non-strategic applications, such as personnel records, on the assumption that if it does not work, in future more important applications are dropped.

This approach, says Bowrage, is the worst of both worlds as the package is still using the resources of the computer system.

"Only nine of the 12 participants in the survey felt that installing a DBMS was the right decision"

Only nine of the 12 participants in the survey were generally convinced that installing a DBMS had been the right decision.

Despite cautionary tales, organisations are starting to believe that they can learn by the mistakes of others, and a DBMS can be a significant advantage if both eyes are kept clearly open in the planning stages. In the US in particular, database systems are in demand and the companies providing them look set for a healthy future. Real improvements are being made in performance, the friendliness of languages and in the power of data dictionaries.

So what, in simple terms, should a DBMS be? Essentially it is an extra software interface between the application programs and the accesses to the physically stored data. This means the application programs should be able to be coded as though they view the data in apparently different structures from the actual physical one so removing the need for sorting, merging or sequential file processing.

The DBMS package is usually sold as general purpose solution, partly because it can be suitable for many applications but also because given its size and cost few would buy it for specific applications. The following obvious but still sometimes overlooked features should be available on any DBMS if it is to be of maximum value:

- First, all information within relevant subject areas should be storable – of course you say, but some systems have been purchased where parts of the required data which were described as "a small problem" by the salesman have proved practically impossible to store in the desired fashion.
- Secondly, each application should be able to be programmed as though only the kinds of data that it needs are present.
- Finally, if major upheaval is to be avoided when change is required then new applications and new types of data must be able to be added without disturbing the coding or operation of existing applications.

There is, without doubt, a strong demand for effective DBMSs stimulated largely by a sense of frustration among the management in some companies who are aware that while the basic data of the organisation is stored within the computer, existing systems do not allow access or extrapolation from that basic data.

Though at first sight there appear to be many DBMSs on the market to choose from, a significant proportion have a bias towards particular applications and regardless of what the salesman says are not suitable for this purpose. Add to this the number of machine dependent systems and the choice soon narrows for the installation tied to one mainframe manufacturer.

Within the DBMS area several relational databases are coming on the market. The idea behind this is that the end user sees the data as being stored in logical relations or tables giving advantages in simplicity and ease of implementation especially for report generation and ad hoc enquiries.

But, as Bowrage pointed out, relational databases are unlikely to be of practical significance to the commercial mainframe installation for some years both because of the large amounts of CPU power and system resource required and substantial investments made in existing systems.

Current DBMSs can be viewed as having five principal approaches in Adabas, Codasyl, IMS, System 2000 and Total. With the exception of Adabas the concept of recognising and defining relationships between record types is the same. Adabas, however, relies on defining one or more indexes to each file.

The precise details of the relationship approach for the other four are quite different. Codasyl has no limit on the number of relationships in which a record type may be involved or on the number of levels allowed in a structure.

IMS and System 2000, however, are restricted to multilevel hierarchical structures while Total allows each "member" record to have any number of "owners" though the network structure is limited to two levels, i.e. records can only be members or owners.

Restrictions of the various approaches can be partially overcome by using various tricks though suppliers tend to exaggerate the ease and scope with which these can be used.

Database techniques have now been available for many years and though development still continues and the benefits become greater, it is clear that these benefits are frequently not easily achieved and careful planning and investigation is vital to ensure that organisations get it right.

BOWRAGE ... The DBMS will be absorbed into the operating system.

ROUND UP

PEARCE ... First UK Ada programmer.

SOME recent events in the software industry you may have missed:

■ After years of waiting, the first application written in the US military language Ada has been put on show by CAP in Reading. The program is used to control a robot arm performing simple manipulative tasks. Sara Pearce, reckoned to be the first full-time British Ada programmer, describes Ada as "not easy to learn".

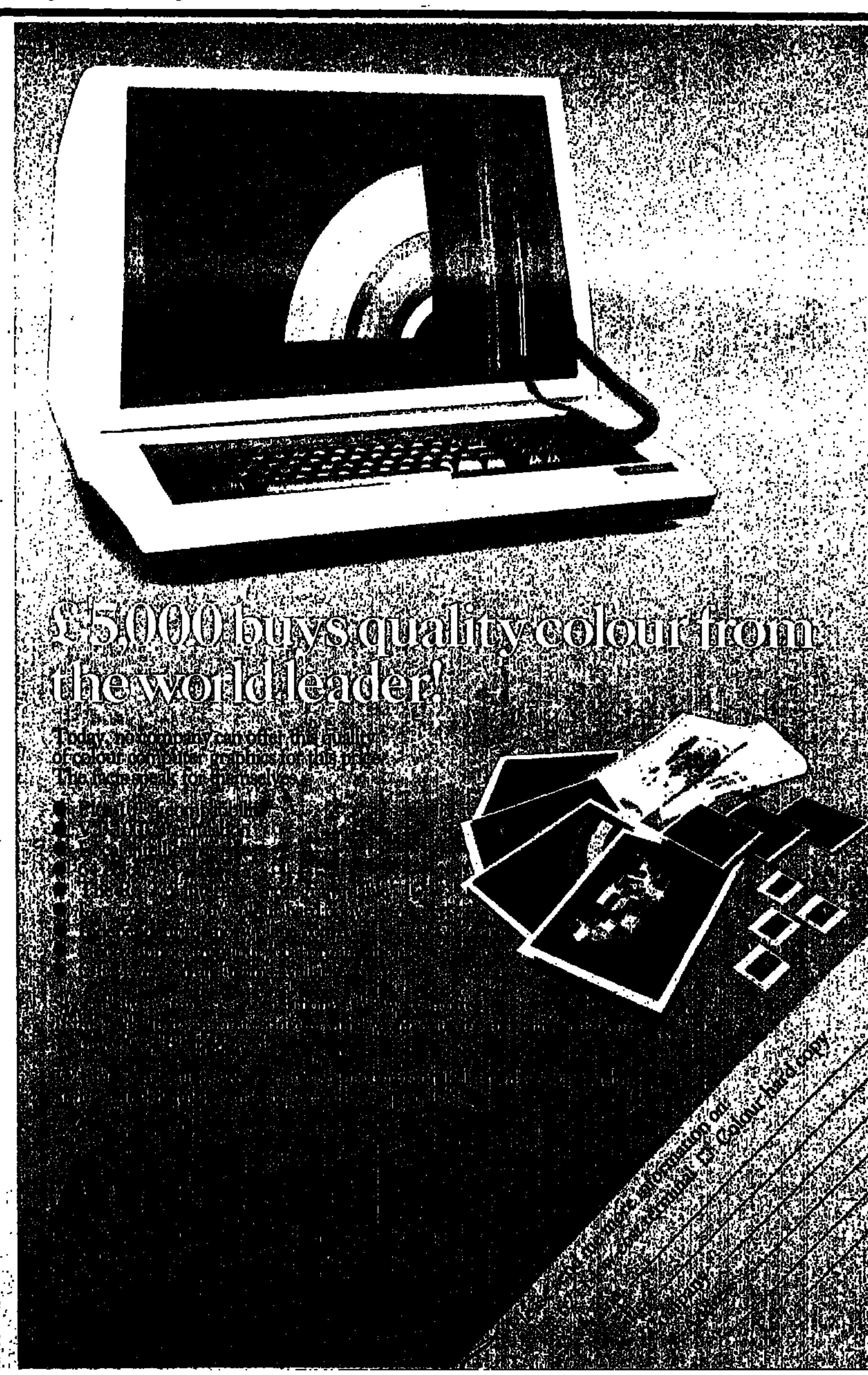
■ Getting in on the program generator act, Southampton-based Logical Computing has launched its rival to The Last One, The Next One. The Next One is considerably cheaper than its precursor, costing a mere £50 including documentation and support.

■ The Pearl program generator, one of the first code-writing tools for microcomputers, has been relaunched in the UK by Pearl International as an end user product running on any CP/M machine. Known as Personal Pearl, the package first made its appearance when Terodec launched the product and then dropped it, tired of waiting for the finished product. However, according to Tony Frowd of the newly-formed Pearl UK, "it was worth waiting for".

■ A 16-bit microcomputer version of Logica's database management system Rapport is being planned to augment the cut-down 8-bit CP/M version already available. The new release is expected to have all the original mini and mainframe features, including the interactive query language interrogation system.

■ Pay rises for programming and systems look set to be in the region of 7% to 8% this year, compared with 9% to 10% in 1981. A survey carried out by the NCC also showed that the average site had 6% fewer analysts than required, 8% fewer programmers, and an 11% shortage of analyst/programmers. With less than a third of sites using trainee programmers, the NCC sees the situation worsening over the next five years.

■ ICL managing director Robb Wilmot has had the VME 2900 operating system vetted by two teams of independent consultants who found that, far from being an embarrassing liability, the product has great potential. Wilmot stated that it is ICL's intention to stick with VME as its prime operating regime well into the 1990s. Wilmot said he intends to make the most of the operating system and the £100 million spent on its development. "VME has arrived," he said. "We now have a secure, open-ended and flexible operating system which is also highly efficient."



SOFTWARE MONTH

Claire Gooding reviews some of the techniques that are likely to affect DBMS practice in the near future

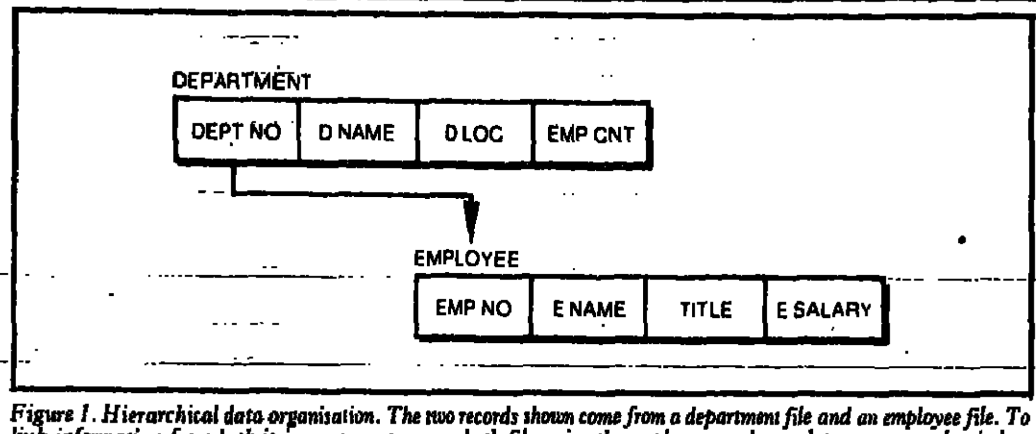


Figure 1. Hierarchical data organisation. The two records shown come from a department file and an employee file. To link information from both it is necessary to access both files using the employee number or department number index, then select or match the records wanted. A particular hierarchical path has to be followed to find a particular data item, thus the employee's file can only be reached by accessing it through the department file.

DEPT NO	D NAME	D LOC	EMP CNT
DEPT A			
DEPT B			
DEPT C			

EMP NO	E NAME	E TITLE	E SALARY	DEPT NO
EMP 1				DEPT A
EMP 2				DEPT B
EMP 3				DEPT A
EMP 4				DEPT B
EMP 5				DEPT C
EMP 6				DEPT B

Figure 2. Relational data organisation. Data is organised in two dimensional "flat files". To locate a particular employee working in a particular department the two files are linked by the common data item or department name, and the search made through a selective query language.

Developments that let users get at their data

THE big problem with adopting a database is that once you've got it, you're stuck with it. Altering things after the DBMS is built and implemented is far more difficult than in other areas of software, because the changes that are made affect not just one program but many.

A structure which looked just right for the job when it was initially designed could start to look ragged a few years on, which is why all the technicalities and mysteries of DBMS teaching lead to one clear message — design for the future, with adaptation and addition in mind.

This is all very well in theory, but as one database manager pointed out at a recent seminar on design, it is almost impossible to know what the requirements of a company are going to be in 10 years' time, so how can one design contingencies in a way that will take care of everything?

Getting it right first time was important with rigid hierarchical database systems like IBM's IMS (see Figure 1), but even if you managed to build a practical structure, a new application or a change in circumstances could turn everything topsy turvy again.

The answers to these problems are still relatively new. And faced with talk of "data analysis" techniques, relational database theory and prototyping people tend to switch off, thinking that it all sounds impressive but cannot possibly apply to the existing software in which so much time, effort and money has already been invested.

There are commercial tools already being made available in all these areas, and even the "database engine", regarded as a wonderful but somewhat experimental freak, has become a commercial reality with the release of database machines, like that produced by US company Britton-Lee.

No-one can afford to ignore recent development in database. For one thing they make the whole business of organising data less cumbersome and open up the possibility of letting end users get at their data.

For those who have considered such things as relational databases as way beyond their sphere, here is a review of the techniques likely to affect DBMS practice in the near future.

Relational databases turn all the data into two dimensional tables (see Figure 2). The data is joined or related by repeating the same item in two tables, and using it to join the files. The common items themselves form the link (often using field names in a query) and there are no pointers involved. This means that the database is shapeless. Items can be added or removed without affecting the rest of the data.

This "redundancy" or repetition of data, anathema to the database experts of 10 years ago, enables files to be "bolted together" whenever necessary. This means that instead of following the route of filename — index field — subsequent field, as one must in file access under a hierarchical system, users can arrange data in different patterns, according to the task under way.

"Real" relational databases are still rare, since they demand that data is essentially "shapeless" and can be added to and amended without affecting other data. The amount of processing involved, as well as the repetition of data, means that there is a penalty in performance.

"Real" relational databases work on live data, linking files rather than creating a temporary pool of data.

The true relational model decrees that every element can be a key, something that would make large masses of data impossibly cumbersome.

The point of organising the data like this is to make it easier to access, and easier to change around where necessary. But the most important benefit for users and DP departments alike is the spin-off of data access. The relational end user language is something which can be applied to existing systems.

The relational query language is an English-like tool which allows any authorised user to get at data with the minimum of training. A selective query can be made by sifting through several files and picking out the relevant data.

The data dictionary is rapidly becoming the focal point of database management. The DD holds the data definitions used in application programs, defining its elements centrally so that any application using the data gets the same picture.

It is no accident that a great many microcomputer program generators and do-it-yourself tools actually start with the building of what is essentially a data dictionary.

It makes sense to hold the data in one co-ordinated form. Once the data dictionary is established then it can be the basis for a kind of tools, for the end user and the DP department, so that applications are easier and quicker to build.

Cullinane, one of the major database specialists whose Integrated Database Management System, IDMS, was adopted by ICL, has long been moving down the data dictionary route.

Cullinane's DDS Data Dictionary System forms the central and most important element of a range of database tools. It is the basis of end user query language and development aids, still expensive, but nevertheless an attractive alternative to developing every application, data and all, from scratch.

"People used to come to us for IDMS primarily," said Gary Hayworth, Cullinane business consultant. "Now they come for DDS and the ADS online development tool first and foremost."

Database specialist CACI which teaches its technique of data analysis worldwide, also stresses the importance of the data dictionary route. According to Harry Ellis, department manager at CACI, the use of a central DD opens the way to a future where systems will be able to access one another's data.

WILMOT . . . No problem converting software.

"The data dictionary system is well on the way to displacing the operating system from its central place in the world of information systems," he says.

To do that job, they have to show what data there is and where and how it is stored, what it means and how it is affected by events.

"If all this is done with enough precision," says Ellis, "then it should be possible for all application programs to be generated automatically for any hardware/software environment."

This would be the key to linking different systems, involving different types of hardware. It would also create a far more adaptable system which could be altered as needs change.

To this end, CACI and other database specialists such as James Martin and his company DMW recommend prototyping, the building of adaptable models, as

● Turn to page 27

THERE ARE THREE THINGS THAT MOST D.P. MANAGERS COULD DO WITHOUT

With the continuing growth of computer applications in business and industry, the role of the Data Processing manager has become more important and challenging than ever before.

However, there are three areas that most D.P. managers would agree are, in plain language, a pain in the neck.

Payroll, personnel and pension administration.

They are complex, time consuming, and frustrating. The requirements are forever changing, the results always required yesterday. They burn up far too much of your department's time, and in many ways aren't really what D.P. is all about.

Yet the effective operation of manpower administration systems is essential to the smooth and efficient running of a company.

So you shoulder the burden, and soldier on, putting up with these three big problems.

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DBMS techniques

● From page 26

an indispensable part of database design.

The building of models, breaking data down into different items and looking at them from all angles, is a skilled technique. Data analysis by "entity-attribute" creates a model not of data but of actual things, such as persons or products. Each person or product is seen as an entity, and then described in terms of "attributes".

This model applies to every database, be it Total, IMS or IDMS. Having described and mapped the data, it is more difficult to describe how it is affected by events. "If you've described things then data can be mapped back against these things, and the environment doesn't matter so much," says Ellis.

"We will live with different types of data for all time — but different types have different advantages, so it is likely that Codasyl, relational, and things like ICL's Personal Data System will co-exist."

Recently Robb Wilmot, managing director of ICL, affirmed that this was the route that ICL was taking. The co-existence of the VME operating system — already hung with tools like Report Master — with the IDMS database, means that the problems of converting data and applications will disappear.

"People will not worry about upgrading and converting," he said. "It will not be a matter of abandoning investment in software — you won't need to transfer it at all. Instead it will be possible to generate all the applications you need."

Database experts seem confident that this can be done. If the logical specification of data is absolutely independent of the software environment, then it would be possible to generate applications across a network. This waits upon standardisation of data specification and networking, so that performance can be brought to practicable levels.

> Distributed database got the push it needed when IBM released the low-cost 4300 series

Some see the mainframe becoming a mere guardian of data or withering away altogether as more of the load is taken off it by front and back-end processors, in an effort to boost performance. In the same way that front-end processors have already taken aver the monitoring of terminals, terminals themselves are becoming sophisticated enough to relieve the host of many heavy tasks, a trend that will continue as terminals become capable of higher storage. This is already happening as micros become linked to mainframes.

Distributed database is something that is much talked about but barely implemented, although systems software houses like ADR and Cincom are already geared up for when people want to distribute their data.

The DDBMS got the push it needed when IBM released the low-cost 4300 series, at which point IBM watchers and the DP world in general girded its loins for the return to distributed data processing, although on a more sophisticated level than in the previous generation.

A distributed database is a co-ordinated body of data distributed over more than one geographic location, and encompassing data on several computers.

Co-ordination, like integration, means standardisation. There are already a variety of bodies, including Codasyl and ISO, trying to bring about those rigorous standards, but there is a long way to go before it is possible to link data across differing software and hardware environments.

According to CACI's DDBMS specialist Richard Barker, the systems purporting to be distributed databases presently in operation are mostly distributed processing systems with DBMS nodes, loosely coupled through networks.

"What we are really heading for is the situation where a manager in Glasgow can get information stored on a machine say in Amsterdam, using the language and application system he is used to, without the application system even knowing where the data came from. It would be as though he were using his own local network," says Baker.

The distributed database relies on the establishment of high performance Open System Interconnect standards.

ICL has long had a working party on distributed database, and plans are now ripe to release a distributed version of IDMS under VME. This might bring the whole concept within the reach of a wider sector of users than the present "distributed" systems, which tend to be exclusively multinational concerns, and still, for the most part, relying on the end user to know where to lay his hands on a particular item.

Database machines are another step towards giving databases better performance by offloading tasks from the mainframe where data is stored.

Burroughs and ICL have both already released products that do the job of winnowing data so that the mainframe can get on with processing the relevant bits.

ICL's CAFS — Content Addressable File Storage — was the first to win widespread recognition, although its area of application is limited until ICL gets it running under the VME operating system.

Essentially more to do with hardware than clever software techniques, CAFS scans structured data rapidly by matching and pulling out all the relevant items.

Attachments like the CAFS processor and the Britton-Lee database machine are effectively intelligent storage media, acting as back-end processors for the host mainframe. They will no doubt become more important since the hierarchical database, and all those other means or storing and retrieving data are bound to be with us for some time yet.

Once the other movements in database reach maturity, and everyone is talking to everyone else, sharing data, making end user queries and otherwise thrashing their systems, performance will become a major preoccupation.

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What those extra bits do

Ferris is a consultant in the UK and US providing marketing and planning advice to computer vendors, particularly in the area of software.

EVERYONE has heard computers being described by their bit size. Micros are generally eight-bit architectures, minis 16-bit, and mainframes are 32-bits and above.

Now that 16-bit micros are starting to appear, what new things can we expect them to do that their eight-bit predecessors couldn't?

People writing general-purpose software for eight-bit micros have to put a lot of effort into keeping their programs small, or delving into the intricacies of overlays or "bank switching". The much larger address spaces of 16-bit machines will make most of this unnecessary, so there should be improvement in software quality, especially from package vendors.

The increased software awareness of 16-bit CPU designers will permit all sorts of desirable features to be provided by systems and utility software, which in turn will result in better applications software. For example, error recovery will be more informative and intelligible than with eight-bit machines. Programmers will have more convenient and powerful tools at their disposal, such as dynamic program linking and fully generalised recursion.

High resolution graphics requires the use of large in-memory tables to represent images, and needs a lot of processing power. The large address space of 16-bit micros, together with cheap memory, provides for the first of these requirements; the second is provided by the improved arithmetic instruction sets available.

Below we look at new applications software.

Large commercial applications. The main problem that arises when using eight-bit micros for DP work is that you run out of space. When room has been taken up by the operating system and Cobol runtime system, a 64K micro is unlikely to leave more than 35 Kbytes for the program, or about 11 Kbytes if a DBMS is used.

SOFTSELL

This is not a lot for professional programs. Batch mainframe programs usually lie in the 20K to 120 Kbyte range when compiled, with average length about 40K (author's survey).

The new machines will clearly change the situation, because of their large address space. This will open the doors to all sorts of applications needing substantial programs, such as Bill Of Materials Processing in the manufacturing field. Further, it will become more practical to distribute mainframe programs to micros.

Engineering/Scientific. Much scientific work has been impractical on eight-bit machines because of limitations in address space and appropriate arithmetic processing instructions, in much the same way that high-resolution graphics has not been possible. This will now change.

Process Control. Many process control applications require very fast responses and good arithmetic facilities. A micro which is controlling a lathe producing car crankshafts needs to make lengthy and accurate calculations quickly, and eight-bit micros have not been up to the task. However, the larger word sizes and more powerful arithmetic instructions available on 16-bit micros will make many process control applications viable.

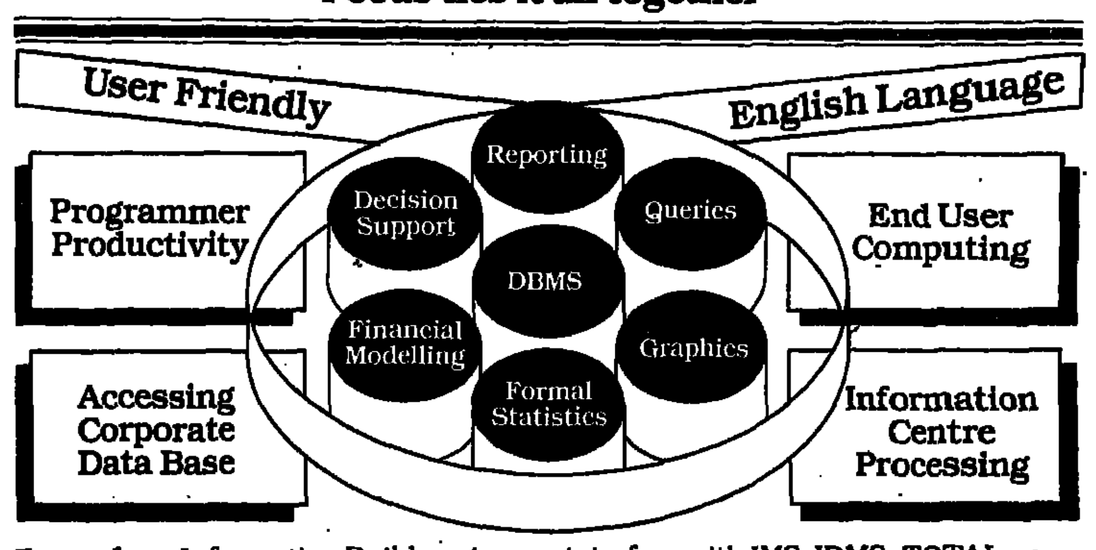
Number Crunching. Number crunching applications typically implemented in Fortran, will become far more common on micros thanks to the much improved calculation power. Programs will be executed more quickly and with greater accuracy.

It looks as if the technical end of computer applications stands to benefit most over the short term.

David Ferris

FOCUS SOLVES

Focus ties it all together



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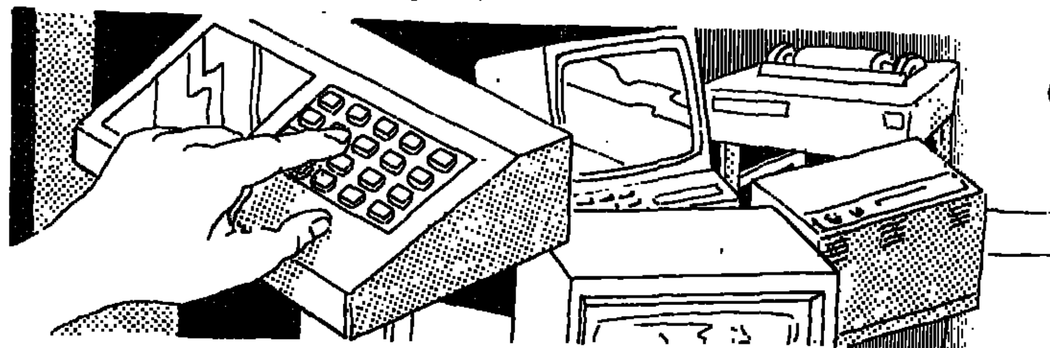

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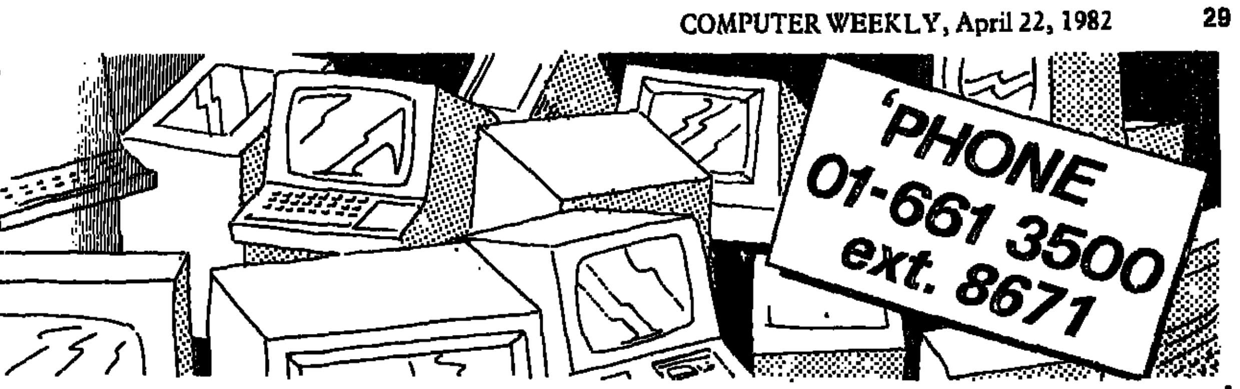

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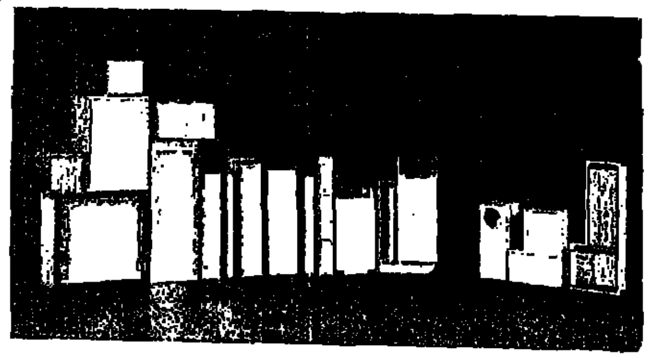

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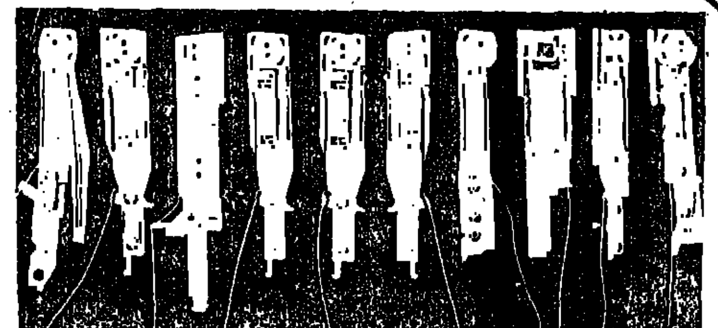

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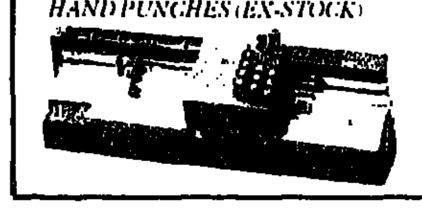

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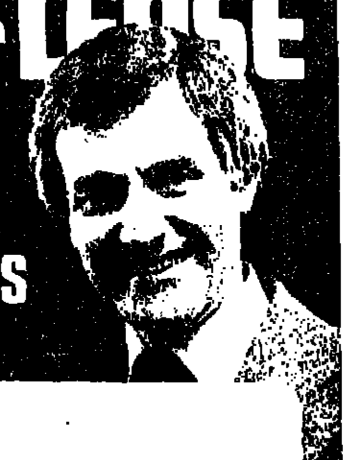

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Tel: Craven Arms (05882) 2711

(9268)

FIELD OPPORTUNITIES LONDON/PROVINCES

£10K + Car + Benefits

A revolutionary concept in high performance mini design has led to an exponential growth curve for this American manufacturer with his existing range of equipment and with the opening of new offices (London/Home Counties), our client is able to offer unrivalled and total systems involvement on South Coast, Midlands and London.

Starting salary will be c£9,500 + OT + 2 litre car + BUPA + non-contributory pension, and training in U.S.A. (family, too!).

Major British Manufacturer, growth of our client, a Leading British Micro Manufacturer, has led to field service opportunities in Central and West London, Basingstoke, High Wycombe, Slough, Essex.

Call Keith Wallis now to find out about any of the above opportunities on 01-543 4844.

ALLTRONICS PEOPLE AGY.
ADV: 1128

WABASH

Due to continued expansion, the U.K. subsidiary of a major U.S.A. manufacturer of computer tape and flexible discs, requires the following personnel –

EUROPEAN SALES EXECUTIVE C £12K

Responsible to the Export Sales Manager for sales in Western Europe. The position requires substantial contact with distributors and providing assistance in the form of product training, customer relations and attendance at exhibitions as necessary.

The applicant should have a comprehensive knowledge of the industry and ideally be fluent in French and German. Extensive overseas travel will be involved.

CUSTOMER SERVICE ENGINEER C £12K

The person we are seeking should have a thorough knowledge of all technical aspects of computer media and will be required to provide a comprehensive technical back up service to our U.K. and overseas sales force.

In addition the person selected will be asked to set up an internal quality control unit.

These are challenging positions suitable for ambitious persons who wish to join a small dynamic organisation. Salary will depend on experience while fringe benefits including a compulsory pension scheme are those normally associated with a progressive company.

Both positions will be based at South Woodham Ferrers, Essex, and if necessary re-located expenses will be re-imbursed.

If you are interested in either of the above positions and would like further details – please write in the first instance to:

JAMES A. ROBSON
MANAGING DIRECTOR
WABASH TAPE (UK) LIMITED
43 REDHILLS ROAD
SOUTH WOODHAM FERRERS
CHELMSFORD, ESSEX

(9241)

Cynon Valley Borough Council
Cyngor Bwrdeistref Cwm Cynon

Department of Director of Finance

Appointment of Computer Programmer/Analyst (Grade A.P.4/5)

Applications are invited from persons with comprehensive experience in the operation of I.C.L. equipment and systems, and with a sound knowledge of COBOL, for appointment to this new post. Experience of R.P.G.2 would be an advantage.

The Council operates an I.C.L. 2904/80 Computer, 96K, supporting two I.C.L. 7502's, also operating at present as an R.J.E. terminal on line to an I.C.L. 2960 in a neighbouring authority. It is intended however, to transfer all operations to this Council's 2904 Computer and the successful applicant will be required to fully participate in the conversion of systems. Salary will be paid in accordance with Grade A.P. 4/5, at present £8,001 to £7,875 per annum.

The appointment is otherwise subject to the Scheme of Conditions of Service of the National Joint Council for Local Authorities' A.P.T. and Clerical Services; to the provisions of the Local Government Superannuation Acts; to termination in accordance with the Employment Protection (Consolidation) Act, 1978, but with a minimum of one month's notice on either side; and to the receipt of a satisfactory medical report.

Application forms may be obtained from the undersigned, to whom they must be returned by 7th May, 1982. Canvassing will disqualify.

N. STONELAKE
Director of Administration

Rock Grounds
High Street
Aberdare
Mid Glam.
16th April, 1982

(9273)

OPERATIONS MANAGER IBM OR PDP11

West Country £9-£11k

Our client is seeking a minimum of 6 years' operations experience, of which 2-3 years must have been spent as an Operations Manager. Either in an IBM 4300 or PDP 11 environment, running under DOS/VSE or RSTS/E.

For more information on duties and company benefits ring Shirley Francis on 01-499 7761, quoting Ref. No. 6071.

(9248)

CL EXECUTIVE 01-499 7761

Project leaders

systemstechnology

You are probably in your mid/late twenties with solid experience of designing and implementing system/technical software. You recognise that producing professionally engineered systems requires careful planning and elegant design. You are successful and you want to contribute your experience and ideas to a company that takes notice. If you have led a small team of programmers or are capable of doing so, then Systems Technology offers you this challenge of providing systems of the highest quality.

You will have the satisfaction of knowing that your products will be used throughout the world.

Systems Technology develop systems and applications software engineered and packaged to the highest standards for use in no-support environments and non-stop applications. The company is highly successful. Activities include communications, viewdata systems, process control systems, graphics and interactive terminal systems. Offices are located in central London and The Hague, Holland.

Phone or write with CV to Jane Putman

systemstechnology

Novus Systems Technology Limited
Warwick House 9 Warwick Street London W1R 5RA
Telephone 01-734 5741

COMPUTER ENGINEERS

Circa £10,000 p.a. plus car
Contact a professional Hire and Search service for the best introductions.

STACK ASSOCIATES
Haddesdon (09924) 42723
24-hour answering service

(9220)

FOR CLASSIFIED ADVERTISING USE

DIRECT LINE 01-661 0121

Team Leader IBM 4300

Berks. to £11,000

A world leader in the pharmaceutical industry is looking for an experienced programming team leader to head up a small commercial applications team of 5 or 6 programmers. Based in a rural area to the west of London the company operates an IBM 4331 using PL/1. The ideal candidate will have several years experience of IBM/CICS environment.
Contact Tim Bridges.

S/W Engineer

Bucks. c. £10,000

A small, high calibre development team working on the application of micro processors to industrial and scientific measurement and instrumentation is seeking a software person with a good hardware understanding of architecture and machine interfaces. Experience with I.E.E.E. 488 interface, 8080/85 and Intel MDS 800 kit, plus programming in Assembler and PLM would be advantageous.
Contact Terry Harvey.

Technical Support S/W

W. M'sex. to £13.5K + car

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client. Higher salary but no car for City office location.
Contact Terry Harvey.

S/W and H/W Designers

Herts. c. £9,000

Working in the area of real time systems in automation applications, our client has a long-established reputation for quality products. Additional experience is sought for a number of teams. Programmers will work at systems software level in Assembler plus high level language. Engineers will work on Motorola based interfaces for automation systems. Previous design experience required.
Contact Terry Harvey.

Prog/Analysts IBM S34

Middlesex to £12,500

This client is a household name in the electrical industry. A growing requirement for computerisation within the company has meant a rapid expansion in the DP function. Analysts and programmers at all levels are required to join in the new and exciting development work. Candidates must be able to demonstrate a thorough knowledge of RPG.
Contact Tim Bridges.

R & D Manager

London W.2. c. £13,000 +

This successful electronics company which operates in the area of broadcasting systems has created a new position of R & D Manager. The successful candidate will be responsible for the design and development of a new micro controlled multi-micro console. He/she will have an electronics background and will initially supervise a small team including software.
Contact Terry Harvey.

Marketing Support

Berks. £10K-£13K + car

A rapidly expanding company providing systems software packages to IBM mainframe users is seeking a first class technical support person. You will have a thorough knowledge of OS/DOS environments and have worked in a sales support or systems programming capacity. You must be capable of working in central support or pre and post sales support.
Contact Tim Bridges.

Systems Engineer

Gloucs. c. £12,000

Candidates must be bright, experienced systems designers. Primarily software biased, you will have an in-depth knowledge of micros to chip level. You will have an individual role in a development team of 18 people. The company markets real time data collection and monitoring systems. Personality for customer contact required. DEC and Motorola useful. Relocation assistance.
Contact Terry Harvey.

Programmers Micros/Comms

Berks. to £11,500

Our clients are based in pleasant rural parts of Berkshire and are seeking programmers to join in the development of their micro based and communication orientated systems. Graduate level candidates are preferred although two to three years experience in Pascal, or Assembler, or FORTRAN would be of interest. Unix knowledge would be particularly attractive.
Contact Tim Bridges.

PDP 11/34 Software

Hants. £8.5K-£11.5K

If you would like to join a successful and substantial international company offering a range of software opportunities with managers who care about your career, this is for you. Projects include real time industrial control systems, basic software R & D, computerised instrumentation etc. You must know RSX11, CORAL and Macro-11. Attractive company benefits, generous relocation.
Contact Terry Harvey.

Open letter to technical and commercial job seekers at all levels:

We are here to help you. Our free service to you is advice and counsel in identifying the most suitable position for the development of your career. Our consultants have held senior positions in the computer industry. They have the experience to understand your needs. If we do not have the position you want, we are prepared to help you find it. Why not accept this invitation to talk over your ideas with us.

Write, or telephone us during office hours as below.
Any other time call Terry Harvey on: Great Missenden (02406) 4705, Tim Bridges on: The Ivy (024 020) 502.
We are always ready to discuss these and many other interesting positions.

HR **H. R. Associates Limited** HR
Executive, Computing and Technical Personnel Consultants
Hill House, Hill Avenue, Amersham, Bucks. HP6 5BQ. Tel: 02403 28383
London office: Regent Street, W1

CONTRACT – BRUSSELS

ANALYST PROGRAMMERS

Sound knowledge of COBOL, IBM Mainframe, preferably OS or MVS, with at least two years' IMS/DB experience.

FOUR PEOPLE required, starting 1st May, 1982, minimum six months. £600 p.w. (negotiable).

For further details contact Bernard Taylor on 01-930 4041/4 or (07016) 66768 (evenings).
Fraser Williams (London) Ltd, Landseer House, 19 Charing Cross Road, London WC2H 0ES.

(9276)

Fraser Williams Recruitment & Training
Associate of The Fraser Williams Group

GEISCO MK III FORTRAN 77

Contract West London
Start immediately

Ring: Sheila Fox
Link Associates Limited
24A High Street, Chesham, Bucks.
(0494) 784922

link

(9309)

PL/1 ANALYST/PROGRAMMERS

GAIN CICS + DL/1 EXPERIENCE

A rapidly expanding retail company is currently offering an excellent opportunity to two Analyst/Programmers to join an IBM team with PL/1 using CICS and DL/1 DATABASE.

Two/Three years' proven experience within either a commercial or financial environment and a desire to become part of a highly motivated team are the major qualities sought.

For further information please contact Amanda Barshall quoting Ref: 6069.

(9223)

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-499 7761

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE
University of Bath

SMALL BUSINESS MICROSYSTEM SUPPORT

The SWURCC microprocessor software unit is seeking additional staff to extend its current activities to the support of small business microsystems. At present support is concentrated on UCSD Pascal and Unix and whilst this will remain the main thrust, other popular operating systems, languages and relevant packages will need to be covered.

The extended services will be offered through the NCC's Federation of Microsystems Centres and will be funded for two years in the first instance. Candidates with suitable experience are invited to write for further details and application form to the Personnel Officer, University of Bath, Claverton Down, Bath BA2 7AY. Appointments will be on a salary scale from £8,070 to £10,575 (under review). Closing date 7 May 1982. Ref. No: 82/38.

(9225)

Sales and Sales Support

Data Communications

The Data Communications Division of IAL has built an enviable reputation for the design and installation of advanced telecommunications systems for worldwide markets. Considerable business expansion demands that we strengthen our sales team with the following men or women.

Sales Support Executives

c.£11,500+car

To work within the Data Communications Sales Department and provide direct field and office support to our team of Salesmen in the U.K. This will include evaluation of Tender Documents, formulation of proposal and quotation documents, customer visits, presentations and training.

These are particularly demanding roles requiring familiarity with data communications products and their applications, so candidates should ideally have experience in the teleprocessing aspects of computers, terminals or telecommunications equipment. Since much of the work will involve close liaison with engineers, an engineering background in design or field support would be particularly useful, but is less important than the blend of personality and business acumen which is so important in a sales environment. Ref. K215/01.

Area Sales Executives

c.£10,500+car

To be responsible for the development of sales of our Data Communications systems and products, including network management systems, modems, multiplexers, branching panels etc., for key areas in London and Manchester.

Applicants, who should be resident in the London or Greater Manchester areas, should be able to demonstrate a proven track record in selling capital equipment in the electronics, telecommunications or computer hardware fields. Ref: K215/02.

In addition to attractive starting salaries and excellent conditions of service which include a car, five weeks annual holiday, pension and life assurance schemes, we are offering assistance with relocation expenses where necessary when we move to our new purpose built facility at Basingstoke later this year.

If you feel you can match the challenge of our requirements telephone Sally Cole on 01-574 3114 or send your c.v. to her at IAL, Aerodo House, Hayes Road, Southall, Middlesex, UB2 5NJ, quoting the appropriate reference.

IAL

THE HIGH TECHNOLOGY TASK FORCE
COMMUNICATIONS SYSTEMS
COMPUTER SYSTEMS AND SERVICES
MEDICAL SERVICES
AVIATION SYSTEMS AND SERVICES WORLDWIDE

(9231)

OFFICE OF THE FUTURE

CREATIVE CHALLENGES IN SOFTWARE MANAGEMENT

The international market for the electronic office is immense and as a result, a considerable number of companies are jockeying for position. In our view, however, it is only those companies with strength in-depth that are capable of making a lasting impact in this highly competitive sector of the market. In order to make a lasting impact and dominate the market, the successful organisations will be those with a commitment to engineering excellence and the ability to produce a variety of systems, coupled with an established international marketing organisation. My client is one of the few international companies able to meet all these criteria.

The company is at a critical stage in the development of their family of systems. Careful analysis of their engineering capability has identified the need to recruit a number of experienced specialists to complement teams of young creative engineers to drive the programmes forward, and lead the engineering into the next development phase.

The positions to be filled are at the Team Leader, and Software Specialist levels, and require candidates with experience of state-of-the-art development work in this area, coupled with leadership skills and the potential to meet medium and long term senior management opportunities. The specific posts we are seeking to fill are as follows:

SOFTWARE SPECIALIST—
Operating System Design and Implementation
The successful candidate will have wide-spread implementation experience in definition design, evaluation of complete operating systems suitable for either mini or microprocessor based hardware. Recent experience must also include file management techniques, interrupt servicing software, multi-task scheduling, communications protocols and performance evaluations. It is desirable that candidates have a working knowledge of associated hardware technology. Ref: SS/OS.

TEAM LEADER—
Operating Systems
Candidates for this post will have experience in leading a team of designers and programmers in development of real-time systems or executive software. It is likely that they will have experience of implementation with mini or microprocessor hardware, backing/main store management, communications line handling and screen and keyboard local processing. Ref: OS/SL.

TEAM LEADER—
External Interfaces and Data Communications
Candidates will have several years' experience in small systems software with a proven track record in at least one of the following areas of expertise:
—Inter-processor Communications—Local Area Networks—Data Communications—Terminal Emulators—Electronic Mail—Message Switching Telecommunications Software
Additionally, a basic understanding of at least one mini/mainframe system would be an advantage, together with experience in Assembler and high level languages. Ref: TL/EI.

SOFTWARE SPECIALISTS—
Word Processing/Information Retrieval
The successful candidate will have considerable Software experience of mini/micro systems. This should be coupled with at least two years' working knowledge in design/implementation of a user interface facility for a high-class word processor or experience in design and implementation of information retrieval systems. Although this experience may have been gained on mainframes, candidates must be aware of the mini/micro systems. Ref: WP/IR.

The engineering challenges presented by these vacancies are immense and our client is able to offer salaries ranging well into five figures, as well as substantial fringe benefits.

If you have experience in these areas, a career move now would enable you to join a company committed to dominating the international market of the Office of the Future.

As a first step, we would like to see your curriculum vitae, or phone for an application form as a prelude to a meeting. Please address your replies to Geoffrey Kling, Managing Director, who is advising the company on these appointments, quoting the appropriate reference. These appointments are open to both men and women.

Cambridge Recruitment Consultants
1a Rose Crescent, Cambridge CB2 3LL. Telephone: 0223 311316.

(9277)

CAD/CAM ANALYSTS AND SUPPORT ENGINEERS

Due to expansion of the support group for their recently launched Integrated Technical System, Counting House are looking to fill those very important positions.

Based at their Suffolk country house headquarters, the successful applicants would be required to travel and meet customers in the UK and Europe. The posts command competitive salaries and company cars, and relocation assistance is also available.

Experience of CAD/CAM in mechanical/production engineering is sought.

Analysts are likely to be graduates and will report to the Director, Technical Systems and be responsible for application studies and new product evaluation/introduction.

Support Engineers will probably have technical design/draughting/production engineering experience using computers, and will be responsible for demonstrations, installations, training, and support.

If you have the right background and would like to further your career in a rapid-growth industry, then apply in writing to Mr Ken Davies.

Counting House
Systems for computer-aided engineering
Counting House Computer Systems Ltd
Fornham House, Fornham St Martin
Bury St Edmunds, Suffolk
Telephone 0284 68921. Telex 817078
Local offices Cheltenham, Nottingham
A member of the Cope Allman International Group

(9272)

Surrey Education Committee
GUILDFORD COUNTY COLLEGE OF TECHNOLOGY
Stoke Park, Guildford
Surrey GU3 1DQ
(Tel. Guildford 31261)

Applications are invited from men and women for the following post, available from 1st September 1982.

DEPARTMENT OF SCIENCE AND ELECTROTECHNOLOGY

SENIOR LECTURER
in
COMPUTER STUDIES
to teach mainly business applications of computers on courses throughout the College.

Salary: £9,624-£12,141 (salary bar at £11,328) plus £213 fringe area allowance (pay award pending from 1.4.82)

Generous relocation expenses available in approved cases

Application form and further details from the Principal on receipt of SAE.

Closing date: Friday, 7th May, 1982.

Readvertisement

(9275)

Computer Engineers

-HARDWARE-SOFTWARE-

for International Technical Support up to £14,000 + car + benefits

Excellent career prospects are offered to those whose in-depth knowledge and skills of either *Computer Engineering, Operating Systems or Data Communications* enables them to support WANG'S leading-edge Office Automation products (integrated Data-Word-Image and Voice processing systems based on Micro, Mini and 32-bit Supermini computers) in the following areas:-

HARDWARE SUPPORT NEW PRODUCT SUPPORT
SOFTWARE SUPPORT TECHNICAL LIAISON

These positions will be based at the European Technical Support Centre in West London. If you have the capability and experience and would enjoy a job featuring an *ever-growing technical challenge and the opportunity for travel in Europe,* simply phone 01-235 4835 (anytime, day or night, 7 days a week) for full details and an application form, or write to:- Mr. P. Gorton, Personnel Officer, WANG (UK) Ltd., WANG House, 661 London Road, Isleworth, Middlesex.

01-235 4835

WANG LEADERS IN OFFICE AUTOMATION

(9274)

County of Avon Education Service
Brunel Technical College
(Principal: F. J. Hawley, MSc)
Department of Science and Mathematics

BRUNEL

Applications are invited for the following posts:

FULL-TIME LECTURER 1 IN COMPUTER SCIENCE
— Ref. 9220
The successful candidate will join a team teaching Computer Science to GCE 'A' level and other courses.
Applicants must have a university degree or equivalent.

HALF-TIME ASSOCIATE LECTURER 1 IN COMPUTER SCIENCE
(2 POSTS) — Ref. 9221
The successful applicant will join a team teaching Computer Science for GCE 'A' level, introductory Programming and similar courses.
Experience of Data Processing would be an advantage.
Salary scale: £6,034-£6,858 p.a.
Associate post will be paid pro rata.

Further details and application forms (to be returned by 6 May, 1982) from Personnel Office, Brunel Technical College, Ashley Down, Bristol, BS7 9BU, quoting appropriate post reference number.

(9218)

WESTMINSTER HOSPITAL MEDICAL COMPUTER CENTRE SCIENTIST/PROGRAMMER

We have an IBM Series/1 and several DEC PDP-11 computers used for on-line acquisition of clinical data, laboratory automation, medical research and statistical analysis. A number of new on-line applications are being developed.

Applicants (male or female) should have an honours degree in Science, Mathematics or Engineering, preferably with some programming experience. The salary scale is £3661-£5488 per annum inclusive of London Weighting Allowance, with a minimum starting salary of £5598 per annum inclusive for a first or a second class degree.

Application forms from Personnel Department6, Westminster Hospital, Dean Ryle Street, Horseferry Road, London SW1P 2AP, Tel 01 828 9811 Ext 2103. If you wish to enclose a typed curriculum vitae with your application form, please do so. Further information from Dr T. D. Preston on 828 9811 ext 2828.

Closing Date: 3rd May, 1982.

(9230)

Operations Analyst

The vital link between operations and design

We doubt you'd need more than the fingers on one hand to tally up the retailers who design, produce and test their own software in-house. But Sainsbury's is one of them – and in fact, we currently have a team of 7 personnel putting all our new systems through their paces.

Due to a challenging combination of expansion and the increasing presence of the computer in every aspect of our business, we now need more help.

It's an unusual role, which effectively creates an important functional link between operations, systems design and programming. And it works like this: you will have individual responsibility for testing and producing the job control languages for one – or more – of the major new systems we have planned to take us into the mid 80s. This will mean close liaison with both designers and operators as you follow each project through from concept to user-satisfaction, working with the support of a hardware line-up that includes ICL 2976's operating under VME/B, ICL ME29 and IBM 4341's (Model 2) operating under DOS/VSE (but switching to MVS in the next 12 months). You'll also be involved in the training of junior and shift personnel and the preparation of application documentation.

History has shown that people with systems test experience gained in a similar environment to ours are few and far between. Your background is, therefore, most likely to have been in operations, including exposure to job description systems. A talented, ambitious man or woman aged c25 and educated to A-level, you will now want the opportunity to develop your expertise substantially and gain hands-on familiarity with a mix of hardware and on-line systems. Sainsbury's will give you every encouragement to do just that.

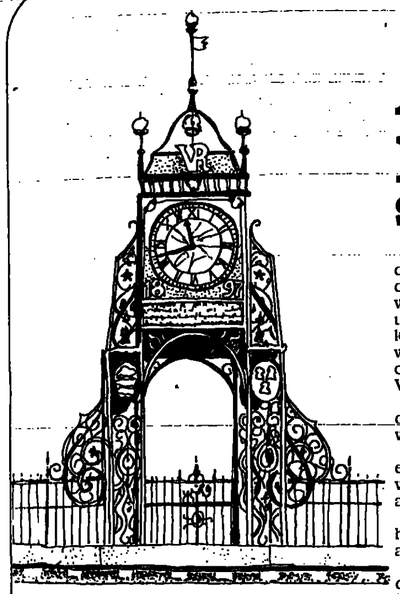
Salary is negotiable c.£9,000 p.a. An excellent benefits package – as you would expect from the UK's most successful food retailer – includes a profit-sharing scheme.

For an informal discussion about your prospects in our Systems Test area, talk to Philip Rackley, our Manager, on 01-921 7243 today or write to Mrs Lorraine Cathersides at:

J Sainsbury plc, Headquarters Personnel Dept., Stamford House, Stamford Street, London SE1 9LL.

SAINSBURY'S

(9231)



Clwyd Analyst/Programmer— Process Control

Salary c.£10,300 p.a.

Approximately 8 miles from the ancient city of Chester and close to the beautiful North Wales coast, we are involved in constructing a purpose built optical wave guide production unit. Our organisation will manufacture and develop optical fibres to telecommunication standards, where the market is rapidly expanding. With a significant reliance upon computing, this position undoubtedly represents an ideal opportunity to join a project where your own technical knowledge will increase with exposure to advanced technology. Following initial co-ordination with U.S. personnel, you will be responsible for the commissioning and continuing development of an Hierachical Distributed Process Control System, using DEC PDP11/44's,/34's,/23's and a VAX 11/780.

The role of Analyst/Programmer within our organisation is important, ensuring the integrity of our computer systems and being directly concerned with real-time and database techniques within a process control environment applied to a high technology product.

We wish to identify candidates offering experience of DEC hardware, ideally having gained exposure to RSX11M, a high level language and ASSEMBLER. A knowledge of system generation would be highly advantageous and you must be prepared to spend a period of time in the USA alongside your American counterparts to acquire detailed knowledge of the software.

The terms and conditions associated with this position are excellent, including 25 days holiday a year, a clean working environment and a generous relocation package where applicable.

If you wish to expand your experience at the forefront of new technological development, contact our Advising Consultant; SHEILA BRADBURY on 061 833 0427 or 0625 523823 (Evenings and Weekends).

19264

Technical Sales & Management Appointments

ESAM

Specialist Computer Recruitment Ltd

SOUTH	MIDLANDS & INTERNATIONAL	NORTH	BELGIUM	HOLLAND
James House, James Street London W1M 5HS 01-935 0671/486 0461	35-37 Great Charles Street Queensway, Birmingham B3 3JY 021-236 3781	Blackfriars House, The Parsonage Manchester M3 2JA 061-833 0427	Avenue Louise 327 Boite 4 1050 Bruxelles 010 322-640 7151/71	Willemsparkweg 92 1071 H M Amsterdam 010 3120 760947

JOIN THE IBM ELITE!

START TRAINING NOW! £9,000-£15,000 + CAR

1. Major manufacturing group offering software training + rapid-promotion of Key-Systems-Programming positions. All you need is 2/3 years' applications programming experience using IBM COBOL or ASSEMBLER. Move now into 4341 systems support and get a head start on OS/VSI, VM/CMS with CICS DLI ROSCOE. Start £9,000.
2. European Systems Support opening for experienced IBM Software Systems Programmer. c £16,000 + Car
3. IBM Technical Consultants required urgently for leading consultancy.

For these and other exciting positions – a short discussion now could mean the best career move you've ever made.

Consultants Ref: SA577

AB EXECUTIVE KINGSTON 01-549 6441

Process Control Programmer

£6½K-£8K

The appointment is in the Development Section of the Computing Branch located in Solihull, West Midlands.

The person required is a career programmer who will become one of a small team involved in developing and supporting the CEGB's own CORAL based process control language CUTLASS. In addition there will be scope for writing programs in FORTRAN and possibly BASIC and COBOL. Training will be given.

The successful applicant, male or female, is likely to hold a degree or equivalent and have experience or interest in work with DEC PDP 11 computers under RSX-11M operating systems using CORAL, FORTRAN or ASSEMBLER process control scientific or engineering applications.

Application forms are available from the Personnel Manager, Central Electricity Generating Board, Heatucks Green Road, Shirley, Solihull, West Midlands B90 4PD, telephone number 021-744 8511, Ext. 719. Completed forms should be returned by 7 May 1982. Please quote vacancy number CW272/81MR.

CENTRAL ELECTRICITY GENERATING BOARD
Midlands Region

(9269)

Senior Operator-ME29

c £11,000 Tax Free
Brunei

Royal Brunei Airlines, the National Airline of the State of Brunei, operates Boeing 737s to seven locations in South East Asia. We require a Senior Operator who has a thorough knowledge of the ME29 Operation Systems and ICL utilities. Communications experience, knowledge of the TIME programming language and of 7502 terminals would be advantageous. Your duties will include the training of a Brunei an operator.

You will be paid a salary equivalent of c. £11,000 in the U.K. Currently, no income tax is levied in Brunei.

Benefits include:-

★ Free housing ★ Generous leave
★ Privilege travel facilities
★ A pleasant social and work environment.

If you are interested please write with full career and personal details to:—

The Personnel Manager, Royal Brunei Airlines, Brunei Hall, 38-43, Norfolk Square, London W2 1RX.

(9261)

Royal Brunei

CAMBRIDGE INSTRUMENTS NOW!

Cambridge Instruments has completed a turnaround into profitability. Our people lead the way in High Technology. Our success can be yours too – come and join us at our Cambridge base.

We have the following career opportunities to offer:

SENIOR PROGRAMMERS PROGRAMMERS

Well qualified candidates with experience in Real Time Assembly Level Programming for mini and micro computers. Salaries to £8,900.

PRINCIPAL ATE PROGRAMMER SENIOR ATE PROGRAMMERS ATE PROGRAMMERS

To produce production orientated programmes using Conrad 179X functional ATE systems. Salaries range £8,000-£11,000.

Telephone: ROYSTON (0763) 60662
SUSAN HYDE STAFF CONSULTANT (Agent)

(9229)

BASIC+ PROGRAMMERS & AN/PROG

VARIOUS **£7K to £9K**
VAX is all the rage at the moment. So here is the opportunity to use your DEC experience and move into the latest range of VAX/11/780 equipment. Vacancies exist at Chatham, Kent, Ilford and Brentford. Of course we also have DEC BASIC+ vacancies at N. LONDON, CITY, SE1 and EGHAM.

CW 15/1 Tricia

IBM COBOL PEOPLE FOR OVERSEAS

S. AMERICA & USA **£ HIGH**
You have probably not considered BRAZIL before so why not now? Especially if you have CICs. Assignments are for 1 to 2 years and what a wonderful place to be. COBOL OS people with Banking or Insurance experience are also required in sunny CALIFORNIA. All the above positions are for Programmers with four years' + experience Analyst/Programmers and Systems Analysts. Phone Michael for details. CW 16/8 Alan

CONTRACT PROGRAMMERS

OS/DOS	ASSEMBLER	LONDON
OS/DOS	PL/1 PROGS.	LONDON
OS	COBOL PROGS.	SOUTH
IMS DB/DC	ANALYST & PROGS.	S. LONDON
HP 9845	A/P BASIC	LONDON
VME/B	COBOL T/P	LONDON & SOUTH
IDMS	COBOL	VARIOUS
NCR	NEAT 3	LONDON
L64	IDS/TDS COBOL	W. COUNTRY
UR 1100	DMS COBOL	SOUTH

Please phone Alan on 01-995 4148 for details and information on freelancing for the first time.

UCA 01-995 4148

Recruitment Consultants
Universal Computer Associates Limited
Data Express House
Prospect Place, London, W9 3BR
(01 968 6138 Evenings)

(9210)

CONTRACTORS

URGENT

We need several experienced

VAX COBOL (Urgent + May)	PROGRAMMERS
PDP11 RSX/11/M MACRO	ANALYST/PROGRAMMERS
PDP11 RSX/11/M RTL2	ANALYST/PROGRAMMERS
HP3000 IMAGE VIEW COBOL	ANALYST/PROGRAMMERS
DOS CICS DL/1 COBOL	ANALYST/PROGRAMMERS
370 (or 360) + SYSTEM 34 (Central London Urgent)	ANALYST/PROGRAMMERS
MVS VTAM (Central London)	SYSTEMS/PROGRAMMERS
CICS (Central London)	SYSTEMS/PROGRAMMERS
HONEYWELL DPS4 IPS COBOL	ANALYST/PROGRAMMERS
HONEYWELL 316 ASSEMBLER	ANALYST/PROGRAMMERS

SAUDI ARABIA

Saudi Arabia Rates to £45,000 P/A Programmers/Analysts with any of the following skills: PL/1 FORTRAN 4 MARK 4 OS/MVS + OR – IMSDB and or DC

A Computer Search contract starts by calling Kelly on Hemel Hempstead (0442) 40761 (24 hour answer service). (8257)

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Computer Search Contracts

OVERSEAS OPPORTUNITIES – SAUDI ARABIA

COMPANY: Olayan Saudi Holding Company. Major Saudi Arabian Trading Group with interests throughout the Kingdom and the Gulf area. Main activities include vehicle and vehicle spare parts sales (5 international franchises), food distribution, general construction, transportation, telecommunications and services.

LOCATION: Head Office Al-Khobar, Eastern Province. Branches throughout the Kingdom and Gulf area.

MACHINE ENVIRONMENT: IBM 370/135 & 4331 DOS/VSE CICS SHADOW QUOTA Interactive Systems COBOL based.

REQUIREMENTS: Due to expansion of EDP systems in all areas of Group activity, suitably qualified senior staff required for the following positions. Note: Applicants must be formally qualified.

ANALYST/PROGRAMMER TELECOMMUNICATIONS

Four years' experience with at least two years in an on-line environment. Must be fully conversant with CICS/VS application programming and debugging. Experience on database techniques desirable. Formal training in systems implementation and maintenance with proven practical experience.

SENIOR ANALYSTS/ PROJECT LEADERS

Six years' experience including formal training in systems design and analysis and proven practical experience of systems development and design and package implementation.

O&M ANALYSTS

Fully experienced in Form Design, Procedures Documentation, Analysis Techniques, Systems Implementation and User Training. Six years' practical experience in a large organisation.

SALARIES: Subject to negotiation but on the scale £12K-£20K based on experience. Tax-free income (5% medical scheme deductions).

BENEFITS: Employment Period: Indefinite, at least two years;
Contracts: Married or Senior Bachelor status;
Holidays: 30 days home leave plus 12 days local holiday;
Travel: Married Status – Return annual air fare for husband/wife and two dependents. Bachelor Status – Two return air fares per annum.
Housing: Fully furnished housing provided;
Medical: Cover provided;

Social: Excellent Company-owned recreational facilities available (Tennis, Squash, Swimming).

Interviews in London. Closing date for applications 13th May, 1982. Applications with CVs should be addressed as follows: CW Box No. 1198.

SC

A LITTLE LIGHT READING.

SENIOR PROJECT MANAGER – ACCOUNTING SYSTEMS TO £15,000 + car

Sainsbury's are a dynamic, successful and profitable company who wish to appoint a Senior Project Manager to control the Company's Accounting System Projects.

The role requires an individual who has a proven man-management record combined with a thorough knowledge and experience of financial accounting systems and procedures.

The responsibilities include the overall management of a 20+ multi-skilled team, most of whom are involved in the investigation, development and implementation of new and sophisticated on-line accounting control systems.

The Accounting Systems are run on both independant computer equipment (ICL 2946 and 2904) and shared processing power (dual ICL 2976 under VME and IBM 4341's under DOS/VSE).

Sainsbury's offer real career advancement and security in an ever-changing and forward thinking Systems Group plus a comprehensive benefits package which includes a company car (+parking space!) and relocation assistance where necessary.

If you match this job description and appreciate the publications illustrated require a little more than a little light reading, then we would like to hear from you.

In the first instance clip the coupon below or ring us and by return you will receive an Application Form and detailed Company Profile.

Please send Application form and Company Profile to:

Surname_____
First names_____
Full address_____
Home tel: _____ Work tel: _____ Ext. _____

CW25

RJB MANPOWER SERVICES LTD.
FREEPOST 24, London W1E 5JZ. Tel: 01-439 8591 (24 hour answerphone)

ANALYST
PROGRAMMER/ANALYSTS
PROGRAMMERS

£6,500-£11,000 + benefits

Scicon computer services limited

a member of the BP Group of Companies, are one of Britain's largest bureaus. Having just won a major contract they are seeking professionals to join a team working in their modern Milton Keynes offices.

The Company currently has on site UNIVAC 1100/61 & 62, IBM 4341 and VAX 11/780 hardware. The Analyst will have 2-4 years experience of securities or investment/broking applications. Programmers and Programmer/Analysts must have a minimum of 2 years mainframe COBOL.

Successful candidates will be involved in massive DEVELOPMENT lasting 3-4 years. As part of a team of 10, applicants will be involved in FINANCIAL APPLICATIONS using the latest DMS, TIP on line programming techniques.

In addition company benefits include relocation package, subsidised lunches, pension scheme, subsidised BUPA and social amenities.

For further information contact:–
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HOWLETT COMPUTER SERVICES
FREEPOST
Leighton Buzzard
Bedfordshire LU7 7BR
Telephone: 0525 384735/382555
or 029 672 221
evenings/weekends

SENIOR SYSTEMS ANALYSTS On-Line Database	£11K Beds.
PROGRAMMER PL1/Database/CICS	to £12K Beds./Berks.
SENIOR SYSTEMS ANALYSTS PDP1170/RSTS/DIBOL/BASIC	to £13K London
SALES EXECUTIVES Packages/Micros/Peripherals/Turnkey	to £25K N. Berks/Herts/Oxford
SENIOR PROJECT LEADERS IBM/ICL, Manufacturer	to £12K Wales/Surrey/Bucks
PROGRAMMERS & ANALYSTS Prime/DEC/RSTS	to £15K North Berks
PRE/POST SALES SUPPORT Minis/Realtime/Cad/Cam	to £12K Berks/Middx/London
SENIOR SYSTEMS PROGRAMMERS DOS/CICS/Teleprocessing	to £13K Midlands/London/Home Counties
SENIOR PROGRAMMERS ICL or IBM	to £10K Beds./Warwickshire
FIELD SERVICE ENGINEERS Mainframe/Minis/Peripherals	to £13K Nationwide
HARDWARE ENGINEERS	to £12K Berks/Scotland
ANALYST PROGRAMMERS ICL 2956/Database	to £10K London
SENIOR SYSTEM ANALYST IBM/Univac/Statistics	to £12K Bucks/Berks
PROGRAMMERS Cobol/Basic/Minis	to £9K Herts/Manchester/Midlands
CONSULTANTS Banking/Insurance/Commodity Broking	to £20K Surrey/Middlesex/London
SALES EXECUTIVES Hardware	to £16K plus commission/Berks
SOFTWARE ENGINEER Telecoms/Military/ATE	to £11K Home Counties
PROGRAMMERS Assembler/Cobol/IBM 370/DOS/VS/MVS	to £13K Surrey/London
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European Client Services Manager

CAD/CAM Flexible UK Base

£18½k (neg) + excellent benefits

With worldwide sales presently exceeding $450 million per annum, this, the Computer Technology Division of one of the world's premier high technology groups, forecasts sales of $1 billion by 1985.

As a result of the present European level of CAD/CAM business and the significant forecasted growth in this market sector, this new position has been created.

Reporting to the Director of Client Services in the US, the role will, primarily, encompass the establishment, development and management of a comprehensive European post-sales support function, both hardware and software. Specifically this will include consolidation of post-sales policies including guarantees, maintenance of contracts, spares inventory levels and the recruitment of a dedicated multi-disciplined support team. The ideal candidate (male or female) will have:

- 6–8 years' mini computing experience, preferably CAD/CAM.
- At least 3-4 years' experience in managing and motivating a multi-disciplined team.
- Several years' experience in developing the client service function.

Probably aged 30-45, you should be able to illustrate a significant record of managerial achievement and commercial acumen in a similar role.

The benefits package is highly negotiable including a comprehensive range of benefits in keeping with the position's seniority.

For an initial and confidential discussion, please call Newbury (0635) 48709 or write in strictest confidence, quoting ref. 318/JA1, to:

LRS
Larkfield Personnel Selection,
55a Northbrook Street Newbury Berkshire RG13 1AN Telephone Newbury (0635) 48709

OSBORNE COMPUTER CORPORATION (UK) LTD.

Dealer Support Executives for The World's Fastest Growing Microcomputer Company

Milton Keynes Up to £12,000 + Car

We have been retained by Osborne Computer Corporation – the exciting young organisation which, in little more than one year, has taken the market by storm. Entrepreneurial flair, an innovatory product and clever software packaging have combined to make Osborne a Company worthy of the industry's finest commercial micro talents.

The "Osborne-1" is the bright star in today's galaxy of personal/business computing. A totally portable machine, economically priced, with advanced capabilities and some of the best and most popular industry standard software, centred around CP/M.

The new UK Headquarters in Milton Keynes reports sales soaring through the £1 million mark in a mere 12 weeks! Not surprisingly the UK management have identified a need to augment the team by the appointment of skilled professionals in two roles.

Dealer Support Executive: A front line support role requiring a marketing awareness. You should be a systems professional with broad commercial applications expertise, and a knowledge of CP/M. Above average interpersonal skills, drive and initiative are of paramount importance.

Internal Support Analyst: Requiring a greater technical flair with commercial analysis skills. CP/M experience is important, as is a programming background using BASIC, or an ASSEMBLER-level language, ideally coupled with an understanding of communications protocols.

These demanding positions present not only immediate personal challenge, but place successful candidates in an enviable groundfloor situation with unprecedented career potential.

In the first instance contact David J. Scarlett on 01-935 0671 or 01-540 2500 (evenings and weekends) or Peter Dudgeon on 01-935 0671 or 01-674 8627 (evenings and weekends).

Technical, Sales & Management Appointments

SCR

Specialist Computer Recruitment Ltd

SOUTH: James House, 40 James Street, London W1M 5HS, 01-935 0671/486 0461

MIDLANDS & INTERNATIONAL: 35-37 Great Charles Street, Queensway, Birmingham B3 3JY, 021-236 3781

NORTH: Blackfriars House, The Parsonage, Manchester M3 2JA, 061-833 0427

BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles, 010 322-640 7161/71

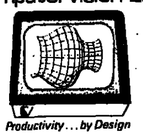
HOLLAND: Willemspaerkweg 92, 1071 HJM Amsterdam, 010 3120-760947

COMPUTERVISION

Computervision Europe, with operations in 15 European countries, is part of the Computervision Corporation, a major U.S. company, which is the world leader in the design and manufacture of Computer Graphics Turn Key Systems - one of the fastest growing high technology industries. Computervision's Computer-Aided Design/Computer-Aided Manufacturing (CAD/CAM) systems and comprehensive support services are helping customers to increase productivity worldwide.

We are a young, dynamic, highly profitable organisation currently embarked upon a major expansion programme to satisfy market demand.

Computervision Ltd.



Productivity . . . by Design

Field Service Engineers

up to £9500 + profit share + BUPA + 2 litre car

* **Derby/Nottingham** * **Berkshire**
* **Manchester Area** * **Surrey**

Are you looking for a career where you can be more than just a hardware fixer? Where you can be totally involved with your customer and his application as well as the machine? Where you can widen your field of experience in a growing industry with the company that is the world leader? Then look no further.

Computervision is the world leader in CAD/CAM and needs additional Computer System Engineers to join our existing team in the above areas. Later in the year, we will require engineers throughout the UK. Previous experience in CAD/CAM is not essential as extensive product training will be provided at our Corporate Headquarters in the U.S.A.

Candidates should have at least 2 years' field experience of mini-computer systems and associated peripherals, ideally gained with a major manufacturer. Make of hardware is not important but knowledge of how the system works and not just which board to change is imperative.

We offer an extensive benefits package which includes a profit sharing bonus, Cortina 2 litre Estate Car, free BUPA for yourself and spouse and life insurance.

We shall be commencing interviews locally for these positions in early May so please contact Ian White or Clive Wright on 0256 58133 or write to them at Computervision Ltd., Computervision Centre, Central House, New Street, Basingstoke, Hants RG21 1AA.

9266

CJA

RECRUITMENT CONSULTANTS
35 New Broad Street, London EC2M 1NH
Tel: 01-588 3588 or 01-588 3576
Telex No. 887374

Short term prospects of considerably increased earnings. Opportunity to become Sales/Marketing Director in 3-4 years.

CJA

SALES MARKETING MANAGER

HOME COUNTIES **£20,000-£25,000 + CAR**

RAPIDLY EXPANDING AND PROFITABLE BRITISH COMPUTER HARDWARE MAINTENANCE AND REPAIR COMPANY

This new appointment calls for self reliant candidates of graduate calibre, aged 30-40, with five years at senior level in the successful sale of leading computer mainframes/minis. In addition, we require at least two years in a sales executive role with a major systems/software house. The ability to participate in technical discussion of hardware configurations is essential although excellent engineering back up is available. Reporting to the Sales/Marketing Director, responsibility is for the identification of likely prospects and their exploitation, from initial assessment, through contract negotiation to successful closure plus necessary follow up. Initial remuneration by high basic salary + commission, negotiable £20,000-£25,000 + car, non-contributory pension, life assurance, relocation expenses. Applications in strict confidence under reference SMM 4091/CW, to the Managing Director:

CAMPBELL-JOHNSTON ASSOCIATES (MANAGEMENT RECRUITMENT CONSULTANTS) LTD.,
35 NEW BROAD STREET, LONDON EC2M 1NH. TELEPHONE: 01-588 3588 or 01-588 3576. TELEX: 887374.

* Unless you are applying for the above position, please do not write to us.

(9228)

Office Communications

London **to £16K**

An oustanding opportunity exists within a consultancy environment to specialise in the field of office communications. Ideal candidates will be able to demonstrate expertise in three or more of the following areas:

* Data Communications
* Local Area Networks
* Packet Switching
* SWIFT Transmission Techniques
* Network Design
* Electronic PABX

Ref: 6075

Applications Analysts

Home Counties **£9.5K + Car**

Working within a customer support environment in the data-communications field, you will be expected to possess a thorough understanding of data-networking together with the ability to influence the decisions of senior executives within the finance sector of industry.

Career opportunities are excellent and those who are disillusioned with the bureaucracy of over-large organisations, will find this company's attitude most refreshing.

Ref: 6076

For further details please contact ROBERT HOGARTH quoting the appropriate reference.

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-408 1670

MORE EXPANSION AT NORSK DATA

Due to the continuing success of Norsk Data's range of 16-bit and 32-bit machines we are expanding our operation at Newbury, Berks. There are outstanding opportunities in the following new posts:

PRE-SALES SUPPORT – SALARY £7-12K

We require self-motivated individuals with a broad experience of technical/scientific or commercial computing. Support experience in 16- and 32-bit minis would also be an advantage.
The successful candidates would work closely with the sales force supporting the wide range of software available in Norsk Data computer systems including real-time systems, CAD/CAM, TP systems, Databases, and of course languages as well as Sintran III our sophisticated operating system.
Apply to Andrew Evans or Mike Cornelius on 0635 31465.

POST-SALES SUPPORT – SALARY £7-12K

There is also an opportunity available within the post-sales group. The successful candidates will have an interest in problem-solving in a sales-orientated environment and have the ability to communicate effectively with customers.
Apply to Mike Cornelius or Andrew Evans in 0635 31465.

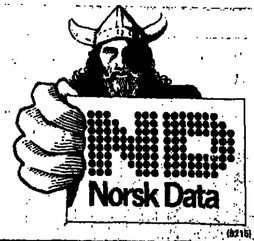
TECHNICAL SALES – GUARANTEED EARNINGS PACKAGE £10-18K PLUS CAR

Norsk Data is looking for both junior and senior sales staff. A high level of sales and negotiating skills is expected for the senior post. Norsk Data is prepared to train suitable applicants in the selling techniques provided they have a first-class knowledge of modern computing methods, in particular the educational and scientific research market.
Apply to Norman Downie 0635 31465.

The above jobs based at Newbury are well rewarded – besides good salary, pension scheme, and BUPA membership there is a bonus scheme which applies to them all.

Address for written applications:

NORSK DATA LTD.
NORD HOUSE
PELICAN LANE
NEWBURY
BERKS RG13 1NU



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Long term contract creating virgin JCL, installing Software Packages etc. must be self-motivated and accurate under pressure. ROSCOE experience an advantage.

DOS/OS JCL WRITERS	**NOW**
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(8291)

01-948 5922

CAD/CAM

Field Service Engineer

basic to £13k + car + bonus

As one of the world leaders in the CAD/CAM market, this rapidly growing International Group is broadening both its product range and its market penetration. As a result, they are now seeking a Senior Engineer to help establish their European Support Team.

Based in Southern England, your initial responsibilities will include support and trouble-shooting on a highly sophisticated range of CAD/CAM systems. The ideal candidate will have:

- 6-7 years' field engineering experience on DG, DEC or compatible systems.
- A thorough knowledge of CPU's, Disc Drives and operating software.
- The ability to assume managerial responsibility.

Due to worldwide growth, the exceptional career prospects are not confined to the UK; to take advantage of these, you must be free to travel (occasionally overseas), be highly self-motivated and possess excellent communication skills.

For an initial and confidential discussion, please call Newbury (0635) 48709 or write in strictest confidence, quoting ref. 319/BA, to:

LRS
Larkfield Personnel Selection
55a Northbrook Street Newbury Berkshire RG13 1AN Telephone Newbury (0635) 48709

TEESSIDE POLYTECHNIC COMPUTER CENTRE

Systems Programming Manager

Re-advertisement

Teesside Polytechnic is in the forefront of computing in education. The Computer Centre has a staff of 40 and operates a large Univac mainframe and a Prime Supermini.

Applications are invited for the vacant post of

SYSTEMS PROGRAMMING MANAGER

Reference Number P.CU.03

which is a key post involving both management and technical responsibility, with the holder reporting directly to the Head of the Centre.

Salary: £11,220-£12,408 per annum.

Application forms and further particulars are available from: The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone: 0642 218121 Extension 4114.

Closing date for applications: 7 May, 1982.

(9250)

Advertisers please note the Scottish recruitment feature, scheduled for April 22, will now appear on May 6.

For further details contact Owen Kelly on

061-872 8861

All Hands on DEC!

SAUDI ARABIA

PROGRAMMER/ ANALYSTS

High tax-free earnings

Our client is a young dynamic organisation based in Riyadh – one of the fastest growing cities in the Middle East. They are the main DEC agency in Riyadh marketing hardware systems, providing standard and bespoke software packages and running a time sharing bureau.

This progressive environment has produced a number of new opportunities for Programmer Analysts to enhance their careers and accumulate the kind of high earnings that you can only dream about in the UK.

To meet this challenge you should have a good general knowledge of DEC hardware, be fluent in BASIC + 2, FORTRAN and maybe MACRO. Software experience to include RSTS 'E, TOPS 20, MUMPS, RT-11 or RSX.

Your background should have been in commercial systems and you should enjoy customer contact as a lot of the work is with first-time users. If you know Networking Systems or Database, it's a plus and you must be self-reliant to enjoy the challenge.

These are 2-year renewable bachelor status contracts offering 50 days' holiday, 2 air flights, excellent free housing, car and medical scheme.

Our client will be in London in early May to carry out final interviews so please contact us IMMEDIATELY. Phone now (24 hour answering service) for more information or an application form. Quote reference CW 110-2D.

CAPP ASSOCIATES
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International & UK Recruitment Consultants

Management Systems Professionals

Careers in Ontario Canada

Ontario

Whether your goal is to enhance your technical knowledge for various applications, develop your management skills or learn new systems, the Management Systems Branch of the Ontario Ministry of Revenue affords you the opportunity to meet those goals. We provide an internal consulting service to 23 client Branches within the Ministry, both in the development and maintenance of E.D.P. and business systems. These systems vary in size from very large data base systems consisting of over five million records to small systems using mini/micro computer technology. Continuing enhancement of our operations has created career opportunities for MIS professionals in the following areas:

Computer Systems Project Leaders — to £15,545

A minimum of 5 years experience in complex business applications and project management is required. Specifically you will be leading and/or co-ordinating a team of systems professionals who provide computer systems development, maintenance and production support to various Branches of the Ministry. Exposure to IMS data base technology and on-line systems applications would be a decided asset. (File 99G)

Business Systems Analysts — to £14,187

You will act as a senior member of various project teams participating in the identification and analysis of the Ministry's organization, methods and integrated office technology needs and following through with the implementation of the designs and solutions developed. A minimum of 5 years experience in a complex multi-project environment, preferably financial in nature, is required. (File 99K)

Systems Analysts — to £14,187

You will act as a senior member of various project teams participating in the identification and analysis of the computer systems needs and following through with the implementation of the designs and solutions developed. A minimum of 5 years experience is required as is working knowledge of ANS COBOL and JCL, preferably IBM; exposure to IMS data base technology and on-line systems applications would be a decided asset. (File 99H)

APL Analyst/Programmers — to £12,264

Your experience in the development of APL application systems and product support will prepare you for your role in the Information Centre. This function is responsible for the support of end user processing in the Ministry, providing the client areas with the necessary tools to access and manipulate their own data for decision support and reporting needs. Knowledge of TSO/SPF, ADRS II, EASYTRIEVE, BASIC and computer business graphics would be a definite asset. Good communication skills and experience in an end user environment are required. (File 99L)

Analyst/Programmers — to £12,264

You will participate in the development and support of computer systems and be involved in the translation of client needs into programming specifications. Thorough knowledge of ANS COBOL and JCL (preferably IBM) is required as is a minimum of 3 years experience in complex business applications using large mainframe computers; exposure to IMS data base technology and on-line systems applications would be a decided asset. (File 99J)

Programmers — to £10,657

You will be involved in systems development and maintenance activities including the conversion of defined specifications into working computer programs, testing, documentation, limited analysis and design. A minimum of 2 years programming experience preferably in a large IBM computer environment is required as is a thorough knowledge of ANS COBOL and JCL. (File 99M)

These are permanent, full-time positions. In addition to the excellent starting salaries (currently under review), the Ministry provides an extensive package of fringe benefits including major Medical, Health, Dental and insurance plans. *Attractive relocation allowances will be provided to successful applicants.* These positions will be based at the Ministry's new Head Office in the city of Oshawa, a 45 minute drive from central Toronto.

*Salaries based on exchange rate as of April 1, 1982.

Senior Ministry officials will be interviewing selected applicants in the United Kingdom commencing May 11, 1982. If you meet the minimum requirements for the position you are applying for, and are interested in a career with a fresh new horizon, please submit a detailed resume quoting the appropriate file number, qualifications, experience and personal data by May 7th, 1982 to: Government of Ontario, c/o Dept. 99, Selective Placement Service, Ontario House, 13 Charles II Street, London SW1Y 4QS.

SYS ANAL

MIDDX. — **to £12K**

Have your work recognised and effort rewarded!! Mini/Mainframe manufacturer enjoying a period of controlled growth need outgoing ambassadors to become totally responsible for customers' systems – Researching, Reviewing and Designing. (JA 3006)

SALES SUPPORT

London — **to £12K**

You could be out of that daily routine and into a dynamic support role using your initiative and Mini/Micro expertise, supporting this international company's retail industry clients. Your gregarious personality coupled, perhaps, with your retail knowledge can land you this unusual role. (JA 3099)

RSX II

Beds — **c£9K**

Are you a Scientific Analyst Programmer with 18 mths. + Fortran and macro experience on DEC hardware? If so, you can work for an exciting international company with HQ in Luton responsible for their worldwide systems. (HR 3162)

SERIES 1

Bucks — **£10.4K**

If you are an Anal/Prog. and have Series 1 experience then a large international company in Bucks are looking for you. They offer a car scheme, relocation package and excellent career opportunities. (HR 2654)

SNR ANAL

Hants — **c£10.5K**

From the City to the seal Are you seeking a change? Would you like a challenging position on the South Coast? Then a large manufacturing company are looking for you. IBM and/or ICL experience, with a COBOL background and four-five years' overall experience. (HR 3192)

SYS 38

Kent — **c£10K+ Car**

Your five years' RPG II/III based systems analysis experience on commercial/financial applications within the construction industry will secure you this exciting opportunity, redesigning all company systems upon S38 + 5280s configuration. (RD 3151)

S'WARE PROGS

S.W. Coast — **c£10K**

Whatever your applications background, if you have not less than 18 months' CORAL, ASSEMBLER and/or REAL TIME experience this is your chance to join an organisation leading the field in the development of a vast range of products and services famous the world over. If you are a specialist there are senior positions that will definitely interest you. (SS 2487)

RPG II

City — **to £13K**

To assist in their major development plans this international financial institution requires Programmers and Team Leaders with at least two years' RPG II. An attractive benefits package is offered and a very promising future is assured. (SS 2592)

COBOL/CICS

Berks — **to £11K**

It's not every day that you find a company able to offer an opportunity as inviting as this but if you can offer at least two years' COBOL and one year's CICS then this is an invitation you can't refuse. Relocation assistance is one part of an irresistible package!! (SS 2418)

SNR S'WARE SALES

London based — **£22K + Car**

A successful international company, providing total software solutions to IBM DOS/OS installations is now seeking a dynamic person with tech appreciation and proven record to increase UK market penetration. High basic plus full training and support will guarantee your success and growth. (RD 3142)

ASSEMBLER

City — **to £10K**

Total involvement in the investment accounting service of this highly respected group will lead to a brighter future with the latest IBM hardware and software. Programmers at both junior and senior level will find it worth their while investigating further. (GT 3178)

MEDIA SALES

Cambs base — **c£10K + Car**

Ground floor opportunity for an experienced salesman to join the UK's leading micro specialist to develop existing outlets and create new business. An excellent effort-related remuneration package will be negotiated in addition to very real career progression. (GT 3112)

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Norwich House, 13 Southampton Place, London WC1

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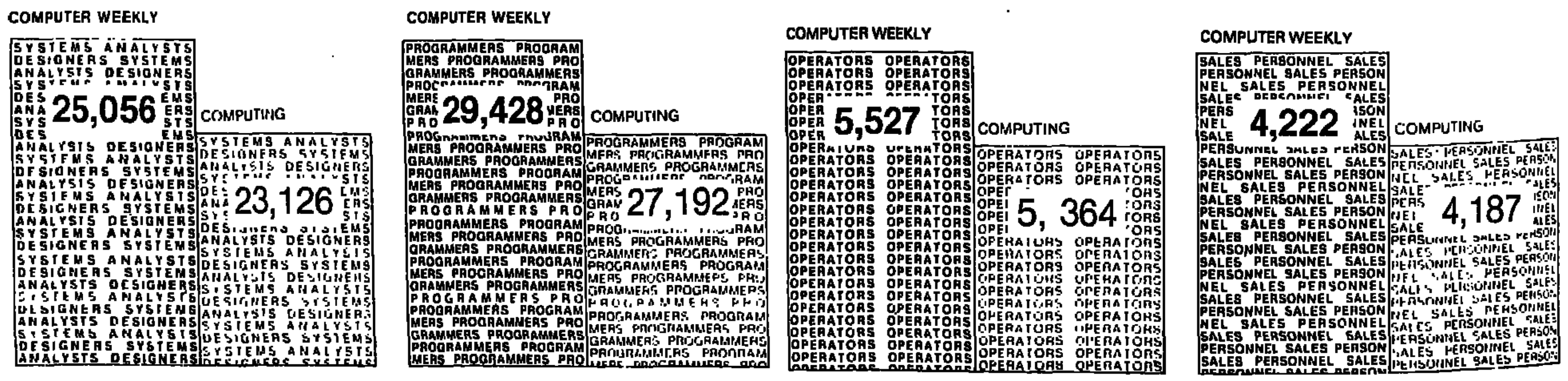

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Media Audits, set up six years ago, is an independent research company with a turnover of over £500,000 in 1982. It produces the Cost Rating Index and the Press Buying Index and is expanding into a number of new areas including media consultancy. More than 80 major U.K. advertisers regularly subscribe to Media Audits continuous services.

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For further details and an application form, to be returned by 6 May, 1982, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol or ring Bristol 656261, ext. 576.

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Project Leader: Programming

Required to control a team of 15 Programmers. The Project Leader will be responsible for ensuring that his staff possess the necessary skills to meet committed timescales established in conjunction with Project Leaders operating in the systems groups.

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Programming Team Leader

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You are likely to be a graduate or equivalent with a minimum of three years COBOL programming experience. Exposure to on-line systems development, database techniques and staff supervision would be an advantage, but are not essential.

To apply please contact: Brian Postles.

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Targa

ANALYSTS & ANALYST/PROG

CITY **To £12,000 + MORTGAGE**

Our client, a leading Insurance company, is seeking Systems Analysts and an Analyst/-Programmer to enhance its expanding Data Processing group. A financial applications background is required for all positions, insurance exposure being advantageous. The requirements are for a Senior Analyst with around five years' design experience and Analysts with a minimum of one year spent in formal Analysis. The Analyst/Programmer will probably have had two years or so in a similar position working in an ICL COBOL environment. All positions carry an excellent benefits package including subsidised mortgage and bonus scheme. Ref. C3885

SENIOR ANALYST

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We are interested to hear from all people who feel they are suitably experienced and qualified. Two years experience will probably be the minimum we will accept and experience with FORTRAN, MACRO 11, CORAL 66 and ASSEMBLER would be most relevant.

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For application form please write to or telephone Mrs Ann Hill, Scott Wilson Kirkpatrick & Partners, Scott House, Basing View, Basingstoke, Hants RG21 2JG. Tel: Basingstoke (0256) 61161.

(9228)

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SALES BIT

Quality of Management – 6

Try to travel outside the prime selling times

DURING the last couple of weeks my thoughts have been concentrated on some of the problems of sales people who are obliged to work from home, particularly those located far from the hallowed chambers of head office.

One problem which is an integral part of the "loneliness of the long distance salesman" syndrome – indeed a factor affecting all but those salespeople whose activities are confined to be in a city – is the considerable amount of selling time lost in travelling. This obviously differs according to the nature of individual sales territories and even the type of product being sold, but typically between 25% and 50% of the selling day of most salespeople is lost due to journeying between customers and travelling from home.

That's a helluva loss, particularly if equated in potential revenue terms!

What's to be done about it? Well, until we can master the skills of travel by "matter transfer" as freely as "Startrek" the loss of time between sales calls must be accepted as a reality.

However, there is a lot that can be done to reduce this kind of wastage and also to ensure that unavoidable travelling time is utilised to good effect wherever possible.

The first obvious discipline is to ensure that as many journeys as possible occur outside prime selling time. In some situations there is sufficient disparity between lunchtimes to enable the middle of the day to be devoted wholly to selling; the art is having sufficient client data to know who eats when.

Where this is not the case sales people must be directed towards the obvious logic of using the lunchtime period for significant journeys rather than heavy lunches. (This does not mean they shouldn't eat!)

Another key factor in maximising the use of selling time is to ensure that the first face-to-face sales call of the day is made between 8.30 and 9.00 am. Many salespeople go for 9.30 to 10.00 am as being the earliest acceptable time for clients.

This blanket assumption eliminates all those who are available earlier. Perhaps this strategy is really a manifestation of personal convenience rather than consideration of other people. It is up to the manager to find out.

Whether selling time is being utilised as fully as possible, there will always be precious time spent in travelling; but this does not have to be a kind of sterile limbo. It is easy to fill in time with work when one is travelling by train or bus. Indeed, were it not for the 8.25 am from Birmingham International the Sales Bit would never be written.

Travelling by car is too demanding a pursuit to do anything but concentrate on the road ahead, except perhaps for listening. Hence the popularity of car radios, cassette players and Citizens Band. It doesn't need a lot of imagination to perceive the educational potential.

The cassette tape is a convenient device for transporting information and provides considerable scope for product education, sales training and "prompting". All that is needed is a cassette player in the car and a source of generating the original soundtrack. There are no end of studios and actors around who are prepared to do this kind of thing.

Product training by cassette is straightforward and can usually be based on existing manuals. Sales training needs to deal with specific selling skills or situations. These can be produced by the company's own sales management or training department (if your organisation is big enough!) or bought in from a professional training consultancy.

"Prompting" tapes consist of the basic questions that need to be answered prior to a particular sales situation: "What's the objective of the call?" "What is the client's problem likely to be?" "What objections should be anticipated?" "What is the likely benefit to the client?" "What will be the structure of the call?" and so on.

A lot of time is wasted in the field. A manager needs to be aware of how effectively selling time is being used and providing the resources for salespeople to maximise their opportunities for both sales efficiency and learning.

Alan Williams

COURSES

■ THE Microsystems Centre at Slough College has organised a number of courses aimed at computer professionals and business users. Managers will be given insight into the electronic office with practical sessions on various business applications on a one-day course on May 7. A technical overview, entitled Microcomputers, Networks and Applications will be held on May 14. Business users interested in CP/M and MP/M operating systems and applications can attend a course on the subject on June 9-10. Details from Alan Curry on Slough 34585.

PUZZLE ANSWER

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(The 4 and 6 are reversible.)